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THE MINING DISTRICTS OF THE WESTERN UNITED STATES

BY

JAMES M. HILL

WITH A

GEOLOGIC INTRODUCTION

BY

WALDEMAR LINDGREN

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THE MINING DISTRICTS OF THE WESTERN UNITED STATES.

PART I. GEOLOGIC INTRODUCTION.

By WALDEMAR LINDGREN.

ORIGIN AND SCOPE OF THIS WORK.

The mining districts of the Western or Cordilleran States are numerous and scattered over wide areas. The first attempt to locate all of them on a single map was carried out by the writer in 1907, with the aid of Mr. J. M. Hill and the statisticians in charge of the offices of the Survey at Denver, Salt Lake City, and San Francisco (Messrs. Chester Naramore, V. C. Heikes, and C. G. Yale). This map of the Western States was included in the annual volume of Mineral Resources of the United States. The large area covered and the necessity of adding explanatory tables made this map cumbersome to handle. When a revision was decided upon in 1910 and assigned to Mr. J. M. Hill, it was found advisable to map the several States separately and publish the maps, with more extensive explanatory text, in the convenient form of a bulletin.

At the outset not a little difficulty was experienced in the definition of the mining districts and in deciding their proper names and extent. Mineral deposits rarely appear singly; on the contrary, a number of them usually cluster in certain localities. In general in the Western States, when such a mineralized area is discovered and locations have been made, a miners' meeting is called, regulations are adopted beyond the simple statutory laws of the Federal and State governments, the limits of the district are defined, and a name is given to it. For many districts these limits are uncertain and vague and can not always be ascertained, though the data are supposed to be on file with the county authorities. The name does not always correspond with that of the locality; for instance, the mining district surrounding Butte, Mont., is called Summit Valley. At many places little attention has been given to these legal districts and the original area has by common consent been subdivided into several more or less definite subdistricts. The real reason for the adoption of mining districts is to have an easily accessible record of claims, for, as is well known, the Federal authorities keep no list of claims located, and this duty is relegated to the recorder of each district.

In California, except in the desert region, few well-defined mining districts exist, and each center of mining operations has been given a geographic name appropriate to the locality.

It is impossible, therefore, to apply the term "mining district" consistently, but in the present work wherever practicable the local designations and rules have been followed. A large mineralized area is designated as a mining region; for instance, the "San Juan region," embracing the mountainous area of southwestern Colorado. The mining region consists of a number of mining districts. These vary greatly in size, but such a representative unit would perhaps include from 12 to 36 square miles. Many districts are informally subdivided into smaller units, referred to as "camps," but as a rule the camps can not be shown owing to the small scale of the map.

DISTRIBUTION OF MINING DISTRICTS.

IRREGULARITY.

In order to show comprehensively the distribution of the districts they have been represented on a smaller-scale map of the Western States (fig. 1). The first impression is that of irregular distribution, a clustering at some places, a scattering at others, with certain areas almost devoid of mineral deposits. Except along the Pacific coast in California there is little evidence of any arrangement in regular zones or "belts."

The most easterly indications of the metallic wealth of the Cordillera are found in western Texas and Oklahoma, where copper ores are thinly scattered through certain "Permo-Carboniferous" sandstones. Slightly farther west rise small groups of mountains, sentinels in front of the Rocky Mountains, such as the Black Hills of South Dakota, the Little Rockies of Montana, or some of the short ranges of western Texas; these contain some ore deposits.

The most westerly districts lie in the Coast Range of California, which contains quicksilver ores, and along the beaches of Oregon and Washington, where the sands yield gold and platinum.

There are several notable "blanks" on the map where mining districts are almost absent. One of these occupies areas in Oregon and Washington. Another barren area embraces parts of Utah, Arizona, New Mexico, and Colorado.

DISTRIBUTION IN RELATION TO GEOLOGIC STRUCTURE.

As the deposits of metallic ores are the results of geologic processes, there is necessarily a close connection between the geologic structure and the mineralization of an area. On a map of the scale of figure 1 it is scarcely possible to bring out these relations clearly, especially where the structure is complicated. The first broad principle which holds for the Cordilleran region is that where the rocks lie horizontal and no disturbance has taken place ore deposits are rare, poor, or

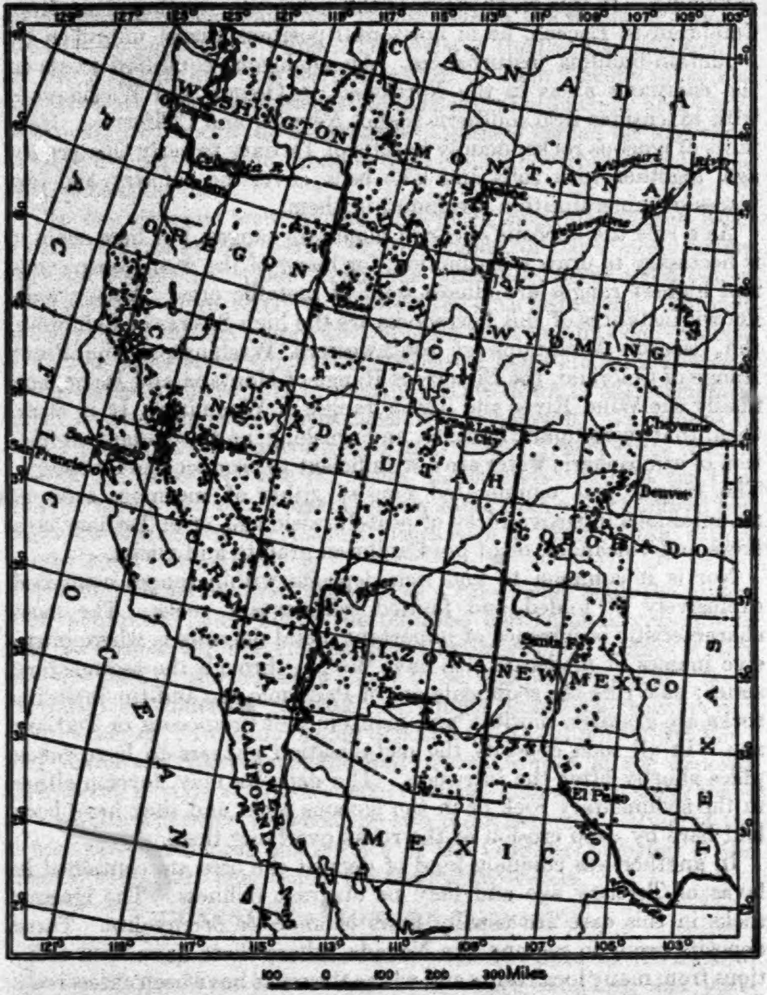
CANADA
WASHINGTON
MONTANA
OREGON
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
CALIFORNIA
ARIZONA
NEW MEXICO
TEXAS
MEXICO
LOWER CALIFORNIA
PACIFIC OCEAN
Columbia R.
Missouri R.
Yellowstone R.
Helena
Salt Lake City
Cheyenne
Denver
Sacramento
San Francisco
Santa Fe
Phoenix
El Paso
100 0 100 200 300 Miles

FIGURE 1.—Map of the Western States, showing the general distribution of the mining districts.

absent. The last is of course true for alluvial areas like that of the Sacramento Valley in California. Few mining districts are found in the vast plateau province of southern and eastern Utah, western Colorado, northern Arizona, and western New Mexico, already referred to; this barren area also extends into western and central Wyoming. In this great province the sediments, ranging in age from Cambrian to Eocene, lie in horizontal position almost unbroken by mountain-building disturbances. An analogous condition exists in the enormous areas in the Northwest, in Oregon and Washington, with extensions into southern Idaho, Nevada, and California. Here flows of igneous rocks, mainly basalts of Tertiary to early Quaternary age, together with tuffs and lake beds, cover the country, and few traces of mineralization are found in them.

As a rule the deposits occur in mountain ranges, but here again it is necessary to draw a distinction, for many of the most conspicuous and highest ranges are almost void of metallic ores. Among well-known instances of this barrenness are the high Sierras of California, the Cascade Mountains of southwestern Washington, the Front Range of Colorado, the Bitterroot Range of Montana and Idaho, and finally the Wind River and Teton ranges of Wyoming. It is clear, then, that mere uplift, faulting, and crushing, and attendant circulation of atmospheric water are not sufficient to produce metal deposits. The ranges just enumerated consist either of enormous areas of mountainous intrusive rocks of post-Jurassic age, or of Tertiary lava flows and volcanoes, or of pre-Cambrian granite and gneiss.

Nor is it common to find rich deposits within ranges composed exclusively of folded and faulted sedimentary rocks. The most characteristic occurrence of important metal deposits is where intrusive masses of moderate size have broken through the sedimentary series; as a rule the sediments are of Paleozoic age and the intrusive rocks are granites, diorites, and monzonite of Cretaceous or Tertiary age. In all such deposits the metallization appears to have taken place shortly after the intrusion. The deposits may develop either in the sedimentary rock or in the igneous rock, and they have been laid bare by deep erosion of the rocks overlying them.

In another less common kind of deposit the ores are contained in lavas of Tertiary age and may be of great richness. The igneous rocks in this case are usually flows of andesite or rhyolite. These deposits occur in regions like Nevada, where there have been eruptions from many local vents and where the rocks have been extensively decomposed by solution and gases of volcanic origin. Many of these deposits have suffered little erosion since their formation, which followed closely the end of the epoch of eruptions.

There are many other kinds of deposits, but those mentioned are the sources of the largest part of the metallic production of the West.

FORM AND CONTENT.

The form of the deposits is manifold and depends on the spaces provided for their reception or on the manner in which they made place for themselves. Practically all of them were formed by deposition from water solutions, usually ascending hot water, and as the path of such waters commonly follows fissures the resulting deposits are in large part fissure veins. The walls of the fissures were soaked by the solutions and ores were deposited in them. Some rocks like limestone are peculiarly susceptible to chemical alteration, and where traversing such rocks the mineralizing solutions spread far and wide, causing the deposition of metallic ores. Such occurrences are called replacement deposits.

The ore minerals were in the first place sulphides of the baser metals, such as galena, pyrite, or zinc blende, or more rarely oxides such as magnetite. Gold alone has originally been deposited as native metal; more rarely it is combined with tellurium. Through the oxygen of surface waters the sulphides have usually been oxidized to various other compounds such as cerusite, hematite, and calamine; this so-called oxidized zone ordinarily reaches down to the permanent water level and in some places considerably below it. In regions of heavy precipitation the oxidized zone is thin. Where there is little rainfall the water level lies far below the surface. Within the Cordilleran region the water level is rarely more than a few hundred feet below the surface; in exceptional places such as Tintic, Utah, it may exceed 2,200 feet in depth.

The ores of the oxidized zone are, as a rule, richer than the underlying sulphides. Just below the oxidized belt secondary sulphides may be formed through concentration by descending surface waters and this part of the deposit is likely to be exceptionally rich. Such secondary sulphides are chalcocite or copper glance and various rich silver minerals. In many copper deposits, such as those at Ely, Nev., and Miami and Ray, Ariz., the only workable part of the deposits consists of a layer of this secondary copper glance. In silver veins no such sharp division between the two zones is found. Much of the richest ore mined near the surface in the Cordilleran region is the result of secondary enrichment by descending waters.

CLASSIFICATION OF DEPOSITS.

The first broad division that can be established among the mineral deposits of the West is between those of pre-Cambrian and post-Cambrian age. As a matter of fact the latter are almost wholly post-Jurassic and a large majority are post-Cretaceous.

PRE-CAMBRIAN DEPOSITS.

The ores of pre-Cambrian age were formed before the earliest Cambrian sediments were laid down in the Paleozoic seas which covered a large part of the Cordilleran region. They had then been subjected to considerable erosion and therefore only the deep-seated deposits are now exposed. They are of many different kinds, but it is believed that they were mainly the result of after action of pre-Cambrian intrusions or were leached from old rocks by hot waters at considerable depth. The rocks in which they are contained are mainly granites, gneisses, and schists of various kinds; most commonly the ores are inclosed in amphibolite, diorite, or gabbro. The mere fact that ores occur in pre-Cambrian rocks is not enough to establish their age, for deposition could have been effected in these rocks during subsequent periods. They are in places directly overlain by Paleozoic sediments, and this of course constitutes a good proof of the age of the ore deposits. The pre-Cambrian rocks have usually participated in and been pressed by dynamometamorphic processes and are now schistose. This is another criterion, for except along the Pacific coast in California, Oregon, Washington, and western Nevada, there has been no regional metamorphism in the Cordilleran region since pre-Cambrian time. The association of the ore minerals with heavy silicates such as garnet and tourmaline is common in pre-Cambrian deposits, though such an association is also found in deposits formed during later epochs of metallization.

The pre-Cambrian deposits include segregations in igneous magmas, such as those of Iron Mountain, in Wyoming, but this type is rare. More common are irregular fissure veins and disseminations in schist. The metal contained is mainly copper in the form of chalcopyrite, with small amounts of gold and silver; lead deposits are of rare occurrence.

As the pre-Cambrian rocks are largely covered by younger sediments and igneous rocks, these ancient deposits are very irregularly distributed and do not form distinct belts or zones. They occur in South Dakota, Wyoming, Colorado, New Mexico, and Arizona; probably also in southwestern California. Compared to the later deposits they are on the whole poor.

POST-CAMBRIAN DEPOSITS.

The deposits formed later than the earliest Paleozoic sediments may be divided into two groups—(1) those contained in sedimentary rocks with no traceable connection with igneous rocks; (2) those occurring in igneous rocks, or in the sedimentary rocks surrounding them.

DEPOSITS IN SEDIMENTARY ROCKS.

The first group is much the smaller one. Aside from some poor and irregular deposits of copper and lead in limestone—for instance, in northeastern Utah and adjacent parts of Idaho—the origin of which is in doubt, this group consists of the widespread copper ores in sandstone found in Oklahoma, Texas, New Mexico, Colorado, Arizona, Utah, and Idaho. The ores are disseminated in Jurassic, Triassic, or Carboniferous sandstones, and the most prominent ore mineral below the zone of oxidation consists of chalcocite. In western Colorado and eastern Utah these sandstones also contain vanadium and uranium minerals. Successful exploitation has been carried on at some places, but on the whole the deposits are poor. The metals sparsely disseminated as salts in the sedimentary rocks are believed to have been leached by surface waters. The concentration has probably proceeded since an active water circulation was established in these strata—that is, since the beginning of the Tertiary.

DEPOSITS CONNECTED WITH IGNEOUS ROCKS.

The large group of deposits connected with igneous rocks yields almost the whole of the Cordilleran production. Practically all the deposits are post-Jurassic, for in the Rocky Mountain region the Paleozoic and the larger part of the Mesozoic were eras of quiet sedimentation. Only along the Pacific coast, in the Sierra Nevada, do we find evidence of Paleozoic eruptions, which were mostly surface flows, and it is not impossible that a few ore deposits in that region may be found to be of Paleozoic age. During Triassic and Jurassic time eruptions of basic lava took place in California, Oregon, and western Nevada, and it is possible that they were closely followed by some metallization. The only definite evidence of this kind is from southeastern Oregon, where the Triassic or Jurassic basic flows east of Baker City, on Powder River, contain chalcocite and native copper in connection with zeolites, calcite, and epidote.

At the end of the Jurassic period or in the earliest part of the Cretaceous an era of igneous activity began in the Cordilleran region, which culminated in the middle of the Tertiary and continued in sporadic outbursts up to a comparatively recent time. Small eruptions are believed to have taken place near Lassen Peak, in northern California, within the last 200 years. Most of the ore deposits now worked in the Western States were formed within this era of volcanism.

Geologic evidence has shown that each epoch of eruptions was followed by a more or less intense mineralization, consisting in the development of ore minerals by the filling of fissures or by the replacement of the rocks themselves in or about the igneous rocks.

Volcanism manifests itself by the eruption of lavas at the surface and by the intrusion of magmas into deeper portions of the crust. The lavas, cooling quickly, usually consolidate as fine-grained porphyritic rocks, commonly containing more or less of a glassy base; the intrusive magmas, cooling slowly and under pressure, result in coarser-grained granular or porphyritic rocks without a glassy base. As the intrusions take place at a considerable depth, it is clear that such masses and the ore deposits which may accompany them will not be exposed at the surface unless it happens that the region has been subjected to deep erosion. The eruption of lava flows at the surface is no doubt usually accompanied by intrusions underneath them, and there is likewise little doubt that the great masses of post-Jurassic intrusions were accompanied by now eroded lava flows. In the San Juan region of southwestern Colorado, at Tintic, Utah, and at some other places erosion has exposed the intrusive bodies below the earlier Tertiary lava flows.

The mineral deposits formed at considerable depth in and around intrusive masses differ both structurally and mineralogically from those formed near the surface, though it is possible, and in fact likely, that the latter may be the upper parts of a deeper body of mineralized rock and that they would be found to change their character if they could be followed to great depths. Therefore, though a distinction must be made between the two classes, there are intermediate forms and probably no radical genetic difference.

The oldest intrusions are the great early Cretaceous granitic batholiths of the Sierra Nevada, extending northward into British Columbia and Alaska. Less extensive intrusive masses of the same age are found in Oregon, Nevada, and Arizona, but on the whole toward the east such masses are less conspicuous and smaller and date from a later time. Most of the relatively small granitic and monzonitic stocks of Colorado and New Mexico are probably of latest Cretaceous or earliest Tertiary age. After they had been exposed by erosion, the middle Tertiary lavas in many places covered their outcrops.

The volcanic flows which cover large areas in the Western States are generally of Tertiary age, ranging from Eocene to latest Pliocene, though the latter are mainly nonproductive basalts. The productive areas are mostly in Eocene or Miocene flows of andesite or rhyolite. Late Cretaceous lavas occur in Montana and Colorado, but so far as known they contain few mineral deposits. Although mineralization, more or less intense, is the rule in the vicinity of intrusive bodies, especially those of moderate or small size, it is rather exceptional in the lava flows and enormous areas of them show no trace of metallic ores.

From the relations explained above it follows that the deposits in or near intrusive bodies are apt to be of greater age than those in the more recent lava flows; on the whole their age ranges from the earliest Cretaceous to the earliest Tertiary. Among the occurrences are the gold-quartz veins of the Sierra Nevada and Oregon and many similar deposits in Nevada; the gold, silver, and base-metal deposits extending from Leadville to Boulder, in Colorado, and the similar deposits in the great batholiths of central Idaho and western Montana and at many places in Arizona, for instance near Kingman and Prescott; and the copper deposits of Clifton, Globe, and Bisbee, in Arizona; of Ely, in Nevada; and of Bingham, in Utah. The deposits may take the form of contact-metamorphic bodies, which usually carry copper and zinc, more rarely lead; or replacement deposits of lead ores some distance away from the intrusive contacts; or normal veins and shear zones with simple sulphides of the base metals, carrying more or less gold and silver; or of native gold or irregular disseminations of sulphides in altered igneous rocks. Very commonly all these modifications occur in the same district and form what has been termed a metallic aureole around the intrusive rock. Structurally the veins are likely to be clear cut and well defined, with regular strike and dip. The filling is massive and drusy structure is less common than in the veins formed near the surface, the principal gangue mineral being a milky quartz.

The deposits formed near the surface and usually appearing in volcanic flow rocks are almost exclusively veins or disseminations; most of the productive occurrences are typical veins. As the rocks are more extensively shattered near the surface than at greater depths, many wide areas of volcanic rock are deeply altered by ore-bearing solutions and transformed into quartzose, sericitic, or kaolinitic masses or less completely altered to greenish "propylite" by the development of chlorite and pyrite. The gangue of many deposits contains calcite, barite, and fluorite in addition to the common usually fine-grained and locally chalcedonic quartz. The structure of the veins is likely to be irregular, brecciated, and drusy. These veins, many of which are exceedingly rich, carry mainly native gold in fine distribution, rarely coarse, often alloyed with much silver; also argentite and various silver antimonites and arsenites.

Base metals are ordinarily not abundant in the deposits formed near the surface. These deposits occur in Nevada, Washington, Idaho, Colorado, New Mexico, Utah, and Arizona, but Nevada contains more of them than any other State. As examples may be cited, in Nevada the Comstock, Tonopah, Bullfrog, Tuscarora, Rawhide, Fairview, and National veins, as well as the more irregular deposits of Goldfield; in Washington, the Monte Cristo and Republic veins; in Idaho, the Custer and Silver City veins; in Colorado, the Cripple Creek and Silver Cliff veins; in New Mexico, the Mogollon veins; in Arizona, the veins of the Black Range, near Colorado River; and in Utah, the veins of the Mount Baldy district, near Richfield and Marysvale. The veins of the San Juan region in Colorado are found in a deeply dissected volcanic dome or plateau and some of the types here occurring are unusually rich in lead, copper, and zinc.

LOCAL GEOLOGY OF WESTERN ORE DEPOSITS.

ARIZONA.

The valuable ore deposits of Arizona are confined mainly to the southwestern part of the State. The portion which lies northeast of a line drawn from a point a little north of Clifton to Peach Springs and thence in the same direction to the Nevada line is covered by the horizontal beds of the plateau province or by lavas and contains only a few and unimportant copper deposits in sedimentary rocks. Wherever, as in parts of the canyon of Colorado River, the pre-Cambrian crystalline rocks are exposed, mineral deposits may be found, though the prospects thus far uncovered do not indicate strong metallization.

The southwestern and larger part of the State is characterized by ore deposits of great variety and abundance, scattered irregularly through detached ranges rising above desert plains. No mineral belts of great persistence and length can be traced.

The ranges of Arizona are of manifold structure and composition. In the eastern half of the mineral-bearing area there is as a rule a succession of several thousand feet of Paleozoic rocks ranging from Cambrian to Carboniferous, which rest on a pre-Cambrian basement that is in many places exposed. In the extreme southeast Cretaceous rocks are also present, though rarely mineralized. Toward the west the exposures of pre-Cambrian schist increase in area and a large number of ranges west of the one hundred and twelfth meridian are wholly built up of such rocks, locally intruded by monzonites or covered by Tertiary lavas.

The geologic section of the Paleozoic and Mesozoic rocks varies considerably in different parts of the State. At Bisbee, in the southeast corner, the Cambrian consists of 430 feet of quartzite overlain by 770 feet of limestone. The Carboniferous includes both Mississippian limestone 700 feet thick and heavy beds of Pennsylvanian limestone, of which 3,000 feet are exposed. The Cretaceous (Comanche) formations aggregate 4,500 feet in thickness. Farther north, near Clifton, the total thickness of the Paleozoic and later rocks is very much less.

Pre-Cambrian deposits of several types containing copper, gold, and silver are found in the districts adjoining Colorado River, near Parker, which is south of Williams Fork, and probably at other places farther south, in the little-explored country in Yuma County. They also appear in the crystalline schists of Yavapai County, and it has been suggested[1] that the great copper deposit of the United Verde mine at Jerome, which is contained in amphibolitic schists, also belongs to this class. Deposits connected with granular intrusive rocks of Mesozoic or early Tertiary age are abundant in all parts of the region and consist of veins, contact-metamorphic deposits, and replacement deposits in limestone away from the immediate vicinity of igneous rocks.

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[1] Graton, L. C., Mineral Resources U. S. for 1907, pt. 1, U. S. Geol. Survey, 1908, p. 597.

Contact-metamorphic deposits in zones of garnet and other silicates adjoining intrusive rocks are particularly abundant, and as excellent examples may be mentioned those of the Clifton, Bisbee, Saddle Mountain, Twin Buttes, Silver Bell, and Washington districts. The gold-bearing veins of Yavapai County are probably of Mesozoic age and appear around smaller monzonite intrusions in pre-Cambrian schists. The veins near Kingman are likewise associated with intrusions of porphyry in pre-Cambrian schist. Copper, gold, silver, lead, and zinc are the principal metals found in the veins of these classes, but tungsten and molybdenum also occur. Chalcocite blanket deposits, due to concentration of lean primary disseminations by descending surface waters, connected with the same epochs of mineralization are mined at Clifton, Ray, and Globe, and prospected at a number of other places.

The deposits of the late Tertiary epoch are generally veins and are contained in rhyolitic and andesitic lavas; they are widely scattered, the most prominent examples being those of the Black Range, along Colorado River north of Needles, where the noted Gold Road mine is situated. Similar veins occur in the Kofa district, Yuma County; in the Mammoth district, Pinal County; and at some places in the Santa Rita Range, Santa Cruz County. The well-known Commonwealth mine, in the Pearce district, Cochise County, also belongs to the same class. These veins generally carry gold and silver, but in places also copper, lead, and molybdenum. Placers are known principally in regions of metallic aureoles around intrusions of granular rocks, but they can rarely be worked, on account of the scarcity of water; dry washing is often resorted to on a small scale. Among the best-known placer regions are those of Yuma and La Paz, along Colorado River; Red Hill, in Yavapai County; Quijotoa and Greaterville, in Pima County; and Dos Cabezas, in Cochise County.

After this general review the individual ranges and their mineralization may be briefly mentioned.

The southeastern mountains, including the Peloncillo, Chiricahua, and Pinaleno ranges, are not rich in valuable deposits, though mineralized at several points, notably at Dos Cabezas and Paradise. The well-known copper deposits of the Clifton-Morenci district are situated near the New Mexico line, near the southern boundary of the plateau province, but in no distinct structural range.

Next to the west, in Cochise and Graham counties, follow from south to north the Mule Pass and Dragoon ranges, both strongly mineralized and containing many types of deposits, most prominent among which are the contact-metamorphic copper deposits of Bisbe (Warren district) and the gold-silver-lead replacement deposits o Tombstone. The Dragoon Range and its foothills have gold-silve deposits in lavas at Pearce and contact-metamorphic and replacemen deposits at Dragoon, Turquoise, and Courtland. To the north northwest these ranges are continued by the Galiuro Mountains which contain copper deposits at Copper Creek and undeveloped gol deposits in rhyolite. Still farther to the north-northwest, in Gil County and adjoining parts of Pinal County, are the veins and blanke deposits of copper ores at Globe, in a region of general uplift in whic the range structure is less well defined. At short distances west an south of Globe are a number of contact-metamorphic copper deposits among which the Saddle Mountain is the most prominent; also th chalcocite blankets of Ray and the now worked-out silver mine o Silver King.

The next tier of mountains begins at the Mexican line with th Huachuca and Canelo ranges, neither of which contains importan mines. Just west of the Canelo lie the Patagonia and Santa Rit ranges, both of which are strongly mineralized and show deposits o many kinds. Contact-metamorphic copper deposits are found a Washington and Helvetia, here and there accompanied by chalcocit deposits. Silver deposits in andesite occur in the Harshaw distric and mixed ores in rhyolite in the same vicinity; lead ores occur a replacements of limestone at the Mowry mines.

North of the Santa Rita extends the rugged Santa Catalina Range with few valuable deposits; at its northern foot, in the San Pedr Valley, lies the Mammoth district, with gold-molybdenum ores i rhyolite.

West of Tucson and Santa Cruz River, in Pima, Pinal, Maricopa and Yuma counties, the desert plains become more prominent Numerous short ranges rise above the plains and are flanked b sloping alluvial fans. The region is extremely arid. Some of thes ranges, especially those toward the west, contain only pre-Cambria rocks. Others are built up of Paleozoic folded and faulted sediment with intrusive Mesozoic granitic rocks. Still others are compose mainly of Tertiary flow rocks. Among the more prominent deposit in Pima County may be mentioned the contact-metamorphic coppe deposits of Twin Buttes and Silver Bell and the gold-bearing veins o Quijotoa, said to occur in Tertiary lavas. In the extreme wester part of the county are the little-known districts of Ajo, Growler, an Gunsight, in which copper ores are said to occur in contact-metamorphic deposits.

In Yuma County there are also a considerable number of low deser ranges containing some mining districts. The gold-bearing vein o the Fortuna district, said to be in gneissoid rock, is southeast o

Yuma; the lead ores of Castle Dome are in a detached range northeast of Yuma. Farther away in the same direction are the gold-silver mines of Kofa, which are worked on vein deposits in Tertiary lava flows.

In the northern part of Yuma County the ranges are mainly of pre-Cambrian crystalline rocks. In the Harcuvar and Harquahala ranges intrusions of probably Mesozoic granite have caused considerable mineralization and the development of gold-bearing quartz veins, the best known district being that of Harquahala. A little farther east, in Maricopa County, also in a small desert range, lies the well-known gold deposit of the Vulture mine.

In the central portion of the State, in Yavapai County, rise a group of mountains, the most prominent of which are known as the Bradshaw Range. In this region cluster a great number of deposits of gold, silver, and copper. Among the gold mines the Congress is the best known, and the copper deposit of the United Verde is situated in the same region.

The mining districts in Mohave County comprise those of the Cerbat, Black, and Hualpai ranges, all of which trend north and south. The Black Range is continued north of Colorado River for some distance into Nevada. The Cerbat ores are mainly base metals associated with lead, zinc, and copper and differ greatly from the more recent gold veins of the Black Range, which outcrop in Tertiary lavas.

CALIFORNIA.

The dependence of mineral belts on geologic structure is particularly well marked in California.

Along the Pacific coast, from the vicinity of Santa Barbara to Humboldt County, rise the Coast Ranges, most recent of the great structural features of the State. They are largely built up of folded and crushed Cretaceous, Jurassic, and Tertiary sediments, in places broken through by andesite and basalt, and an older series of diabasic and serpentinoid rocks. The Coast Ranges are singularly poor in deposits of the ordinary metals, but a persistent belt of quicksilver ores follows them throughout and reaches its greatest development just north and south of San Francisco Bay. The quicksilver deposits are of late Tertiary or Quaternary age and seem to have been formed shortly after the eruption of basalt and andesite. The ores were formed near the surface and in all probability by hot ascending springs, of which the Coast Range contains a great number. The gangue usually contains much opal. Among the best-known districts are those of the Clear Lake region and those of New Almaden and New Idria, in Santa Clara and San Benito counties.

To the east of the central valleys and separating them from the Great Basin lies the long and imposing mountain block of the Sierra

Nevada. Geologically it consists of clayey and sandy sediments ranging from earlier Paleozoic to later Jurassic in age, closely folded and forming a belt along the western part that greatly increases in width toward the north. In early Cretaceous time these sediments were intruded by enormous masses of granitic rocks, mainly granodiorite, which since the late Cretaceous and Tertiary movements along the eastern border of the range form a zone that is of moderate extent in the northern part, but widens toward the south until in Tulare and Kern counties the intrusive rocks form nearly the whole range.

The gold belt of California, a succession of deposits of unusual persistence, begins as a narrow fringe along the foot of the Sierra Nevada in Tulare and Kern counties, but widens greatly toward the north, and in Butte and Plumas counties is over 60 miles broad. Along this belt are located a great number of well-known mining districts. In the southern counties from Eldorado to Mariposa it contains the numerous and strong veins of the Mother Lode region, on which a number of well-known mines are being worked. The Kennedy, with a depth of 3,600 feet, is the deepest mine in California. Farther north, in Nevada County, the celebrated Nevada City and Grass Valley districts are situated within this belt. Placer deposits abound throughout the gold belt, having accumulated along the present rivers and in the far older Tertiary gravels now exposed as erosion remnants high up above the canyons; in part the Tertiary gravels are covered by andesite and rhyolite, likewise of Tertiary age but without evidence of mineralization. The Tertiary gravels are still mined at many places by hydraulic or drifting methods. The Quaternary gravels at the foot of the range are now mined extensively by dredging at Oroville, Marysville, Folsom, and several points in Calaveras County.

The primary gold deposits, as distinguished from the secondary placers derived from their destruction by erosion, are for the most part quartz veins containing free gold. They were formed shortly after the intrusion of smaller masses of granite, granodiorite, gabbro, and peridotite into the sedimentary series, probably in early Cretaceous time.

The parts of the veins now exposed give evidence of having been deposited at considerable depth. Many thousand feet of overlying rock masses, together with the former outcrops of the veins, have been removed by erosion. Toward the north, in Tehama, northern Plumas, and Lassen counties, the gold belt is covered by a broad tongue of Tertiary volcanic rocks. Equally abruptly it emerges from this mantle above Redding and continues northward to the Oregon line, its width being from 50 to 60 miles. In this area, comprising parts of Shasta, Trinity, and Siskiyou counties and generally known as the Klamath Mountains, gold-bearing veins and placers are widely distributed. The placers have been the more productive. The richest veins occur in the Coffee Creek region. Hydraulic mining is still actively pursued along Klamath River and in the older Tertiary gravels. The deposits and their geologic conditions are similar to those of the Sierra Nevada.

Toward the south end of the State gold-quartz veins, probably of about the same age as those of central California, appear in San Diego, Riverside, and Los Angeles counties, in the mountains which form the continuation of the Sierra of Lower California. Except in San Diego, where the formerly productive Banner and Julian districts are located, the output from these deposits has been small. The veins occur in or near masses of metamorphic schist, which lie embedded in granitic rock.

A less well-defined belt of copper-bearing deposits follows the foothills of the Sierra Nevada and continues toward the north-northwest into the Klamath Mountains. Deposits of economic value have been found in Calaveras County at Copperopolis and Campo Seco; in Placer County at Dairy Farm; in Nevada County at Spenceville; and at several other places. At present the most important copper mines are those at Keswick and Bully Hill, in Shasta County. Copper deposits are also found in the northern part of Siskiyou County, near the Oregon line. The copper deposits as a rule occur in connection with igneous rocks, including both basic rocks like the diabase porphyries and Mesozoic andesites of the Sierra Nevada and acidic rocks like the alaskite porphyry of Shasta County. In places they also occur in genetic connection with peridotite and gabbro. They appear to have been formed a little earlier than the gold-bearing quartz veins in late Jurassic or earliest Cretaceous time, at considerable depths below the surface. Some of the smaller copper deposits, however, probably resulted from concentration by deep water from the surrounding rocks. All these deposits carry chalcopyrite with pyrite; only exceptionally is chalcocite present.

That part of California which lies to the east of the Sierra Nevada and the Peninsular Range is very different from the rest of the State. It is an arid region with detached ranges, generally trending northward; geologically it belongs to the Great Basin region of Nevada and the desert province of Arizona. The map shows that the irregular and scattered distribution of the mining districts in this area is similar to that of the region mentioned. In many localities the geologic structure is as yet unknown. In general, the deposits may be grouped into those of pre-Cambrian age, those connected with granitic intrusions of late Mesozoic age, and lastly, those of late Tertiary age, which usually occur in surface lava flows. The few pre-Cambrian deposits are probably limited to the vicinity of the Arizona boundary line and contain mainly copper ores and gold ores. The gold mines at Hedges, near Yuma, Ariz., probably belong in this class, as do those of Whipple Mountain, in San Bernardino County. The Mesozoic deposits are widely distributed from Mono County southward and appear as aureoles around smaller intrusions of granodiorite. They are in large part gold-bearing quartz veins, exemplified by the deposits at Randsburg, in Kern County. A number o small districts in the desert range of San Bernardino and Riverside counties contain gold and quartz veins in granitic country rock.

A smaller number of deposits are replacements of limestone by galena, as at Tecopa, Cerro Gordo, and Panamint, in Inyo County. Still fewer are the contact-metamorphic deposits, of which example may be found in the copper-bearing garnet zones of Ubehebe, i Inyo County, and the Standard mine at Cima, in San Bernardin County. In the western part of California contact-metamorphi deposits are very rare, though a few unimportant examples ar found in the Sierra Nevada and the Peninsular Range. In th northern part of the State, in Shasta County, important contact-metamorphic deposits carrying magnetite occur between limeston and granitic rocks north of Pit River, and similar deposits carrying copper have been discovered on the same contact south of the river.

More characteristic of the eastern region are the deposits—generall quartz veins—in Tertiary rhyolite and andesite. Isolated example are found along the eastern boundary of the State, as at Hayde Hill in Lassen County, in Alpine County, at Bodie and several othe places in Mono County, in Inyo County, and in San Bernardin County. They usually carry both gold and silver, but in places (a at Calico) also silver alone. Several deposits of this kind are foun near Mohave, in San Bernardino County.

The iron deposits of California are scattered from the southern t the northern part of the State. Few of them are of present economi importance. Most of them carry magnetite and were formed at th contacts or elsewhere shortly after the intrusion of deep-seate igneous rocks. The contact-metamorphic deposit of Herault, i Shasta County, has already been mentioned. Other magnetit deposits in granite occur at Dale, San Bernardino County, and in th Eagle Mountains, Riverside County, both connected with graniti intrusions. Another iron deposit is found at the Minarets, in th western part of Madera County.

Manganese deposits of minor importance as well as prospects o chromite are found at several places in the Coast Range. The chromite is contained in serpentine country rock.

Deposits of rare metals are not abundant in California. Platinu occurs in the gold-bearing gravels of northern California and in th Sierra Nevada, and a small quantity is saved each year. Deposit of scheelite are worked near Randsburg, Kern County.

COLORADO.

The ore deposits of Colorado are confined to the western or mountainous half of the State, but within this area they are not by any means uniformly distributed. Parts of the area near the western and northwestern borders belong to the plateau province of little-disturbed rocks. These contain only a special class of copper and rare-metal deposits. The southeastern part of the mountainous area is also poorly mineralized. The important deposits are confined largely to a diagonal belt trending northeast and southwest, beginning in Boulder County and ending in the San Juan Mountains.

The mines of Colorado yield principally gold, silver, lead, and zinc. There are few distinctly copper districts and none of great importance. With some exceptions, like those of Cripple Creek, which are almost exclusively gold bearing, the ores of Colorado are of complex nature and in many places they contain all five of the metals mentioned.

The rugged Front Range, composed mainly of pre-Cambrian rocks, extends from the Wyoming line to the Sangre de Cristo Range, at the New Mexico boundary. On the whole, it is very poor in ore deposits.

West of the Front Range lies a wide belt of uplifts of complicated structure, trending mainly northeastward, in which the basal pre-Cambrian is exposed at many places but elsewhere covered by a folded and faulted sedimentary series consisting of Paleozoic and Mesozoic beds of great thickness. As exemplified at Aspen, the sedimentary rocks consist of relatively thin formations of Cambrian, Ordovician, and Devonian age and several thousand feet of Carboniferous beds, in part sandy. The upper and thicker part of the Carboniferous is of dark-red color and may be considered as part of the "Red Beds." Above this lie 2,000 feet of Triassic "Red Beds" and the section is capped by Cretaceous sandstones and shales, which are said to reach a thickness of 3,500 feet at Breckenridge. At Leadville the basal formation is the Cambrian quartzite, 200 feet thick. This is overlain by the Silurian white limestone, 100 feet thick, covered by 50 feet of the "Parting" quartzite of Devonian age. Above this comes about 4,000 feet of Carboniferous rocks, divided into the Leadville or "Blue" limestone, 400 feet thick, the "Weber shales and grit," 2,500 feet thick, and 1,000 to 1,500 feet of the limestone and red beds of the "Upper Coal Measures."

With these sediments are interbedded sheets and dikes of monzonite porphyries of many kinds, and these intrusive rocks as a rule indicate the presence of mineral deposits.

The southwestern part of the State, known as the San Juan region, is marked by a large area of Tertiary (in part early Tertiary) volcanic flows of rhyolite and andesite. Intruded in this series are smaller masses of monzonite porphyries, and surrounding it in slightly upturned position is a thick mass of sediments, including a thin body of

Devonian rocks, about 4,000 feet of sandstone and limestone of Carboniferous age, including the lower part of the "Red Beds," about 1,000 feet of Jurassic and Triassic "Red Beds," and 1,500 feet or more of Cretaceous formations.

The northeast corner of the State is covered by flat-lying Eocene beds except where the east end of the Uinta uplift has brought older rocks to view.

As in other States, the deposits may be conveniently divided into those of pre-Cambrian and those of post-Cambrian age. The latter are by far the more important.

The pre-Cambrian ores occur, of course, only in the rocks of the same age, but such occurrence alone is not a sufficient criterion for determining the age of the deposits. Near the northern boundary line and extending into Wyoming are a number of low-grade copper deposits—for instance, those of Pearl, in Larimer County—which, on good grounds, are held to be of this early age. Little production has thus far been obtained from these deposits. They are in part veins, in part irregular masses of pyrite and chalcopyrite, usually connected with intrusions of diorite or gabbro. Considerably farther south, in Jefferson, Fremont, and Chaffee counties, are several copper deposits, also in close connection with basic igneous rocks to which a similar age has been attributed. The most prominent among these deposits is that of the Sedalia mine, which also yields zinc ore. A considerable number of small deposits of copper ore in the Front Range and the Sangre de Cristo Range probably belong in the same class.

As elsewhere in the Western States, there was a long interval between the pre-Cambrian and the later epochs of metallization, which may be assumed to begin with the close of the Cretaceous or the beginning of the Tertiary. The division between the earlier Tertiary mineralization which followed the intrusion of monzonite porphyries and the later development of deposits in surface lava is less strongly marked in Colorado than elsewhere.

The principal mineral belt, extending from Boulder to Leadville and Gunnison, appears to be of earliest Tertiary age and its ores occur in a great variety of rocks from pre-Cambrian to Cretaceous, constantly associated with intrusive dikes, sheets, and masses. Most of the deposits bear clearly the stamp of having been formed at considerable depths below the surface. None of the deposits occur in surface flows.

Beginning from the northeast, we have, first, the gold and silver bearing quartz veins in the pre-Cambrian rocks of Boulder, Gilpin, and Clear Creek counties. Associated with them and of about the same age are the tungsten veins of Boulder County, which yield the larger part of the tungsten ores produced in this country. There is little free gold, the precious metals occurring mainly in pyritic ores, galena, or zinc blende. The veins are accompanied by a system of porphyry dikes. Beyond the Divide are the veins of Breckenridge, in Cretaceous rocks, accompanied by sheets of monzonite porphyry. A number of smaller districts connect with the great deposits of Leadville, in which complex pyritic ores replace limestone and carry silver, gold, lead, zinc, and copper. The intrusives have here taken the form of thick sheets forced into the Paleozoic sediments. The Red Cliff and Tenmile districts are also characterized by replacement ores, as is Aspen, west of Leadville. At Aspen the silver-lead-zinc ores follow a network of fault fissures in limestone and are not so intimately connected with intrusive rocks; it is probable that the mineralization here is of more recent date than elsewhere.

To the southwest of Leadville, in Gunnison and Chaffee counties, lie a considerable number of less important districts exhibiting considerable variety in structure and mineralogy. A short barren stretch separates the Gunnison region from the San Juan region and is occupied mainly by surface lavas and tuffs originating in the volcanic center of the San Juan Mountains.

The San Juan region is rich in ore deposits, which carry mainly gold and silver, but also to some extent lead, copper, and zinc. The ore deposits are typically fissure veins which have a northeast or northwest trend. At Telluride and Ouray these quartz veins carry gold and some silver. At Silverton and in the Rico Mountains base metals are also present in abundance. The veins cut most of the volcanic flows of the region as well as the still later intrusive monzonites and in places the sedimentary and pre-Cambrian rocks. Toward the eastern border of the region is the Lake City district and, still farther east, the Creede district, the quartz veins of which cut rhyolite and carry gold, silver, lead, and zinc.

The veins of San Juan County bear the marks of having been formed relatively near to the surface, but, as is natural from the great depth to which erosion has exposed the lower rocks, some of them present features characteristic of deposition under conditions of higher temperature and pressure.

Practically no contact-metamorphic deposits of economic importance exist in Colorado. The ores of Leadville recall this type in some ways, but lack the characteristic contact minerals.

Outside of the main mineral belt are the districts of Cripple Creek and Silver Cliff, both situated in the Front Range south of Denver. The ores of these districts were deposited relatively near the surface of old volcanic centers. At Cripple Creek, well known as one of the principal gold-producing districts of the United States, gold tellurides occur in veins in a dissected volcano, which, in late Tertiary times, emitted phonolitic lavas. At Silver Cliff the silver ores occur in andesite and rhyolite, in part cementing breccia-filled pipes in the volcanic rock. The age of this mineralization is thought to be Eocene.

In many of the gold districts mentioned detrital or placer deposits are found in the valleys below the outcrops of the ore bodies. The richest parts of these placers were washed out many years ago, but they still yield some gold by modern processes of dredging and hydraulic work.

There are few placer deposits in the San Juan region and at Cripple Creek. Most of them are in the main northeast-southwest belt from Boulder to Leadville and the most important now worked are situated at Breckenridge. Some gold is also mined from the Recent and Tertiary gravels of Routt County.

Colorado is poor in iron deposits. A few small magnetite deposits occur in Gunnison County, generally at the contact of sedimentary rocks and granite. The oxidized ores of Leadville in part are rich in iron and manganese and are utilized as flux and in the manufacture of spiegeleisen, an alloy of iron and manganese.

It remains to mention an entirely different class of deposits, carrying copper, vanadium, and uranium. The ores occur disseminated in sedimentary beds, mainly in the "Red Beds" of southwestern and central Colorado, and were probably formed by concentration by means of meteoric waters from small quantities of the metals disseminated through the beds. Vanadium and uranium bearing sandstones of Jurassic age are mined in San Miguel and Montrose counties and also occur in Routt County. In places copper occurs together with the metals mentioned, and chalcocite ores have been found disseminated in the conglomerates, sandstones, and carbonaceous shales of Red Gulch, in Fremont County. They are also reported from Huerfano County, in the south-central part of the State. The tungsten-bearing veins of Nederland, in Boulder County, have already been mentioned.

IDAHO.

Ore deposits are irregularly distributed in Idaho. The extreme southern and eastern parts of the State are almost barren. The mining districts are most abundantly clustered in a region extending from the vicinity of Boise in a northeasterly direction to Lemhi County and the Salmon River valley. The most important output is that of lead and silver from the Cœur d'Alene district, in the northern part of the State. Gold and silver are derived from the belt mentioned and from veins in Owyhee County, in the southwest corner of the State.

The most prominent geologic feature is the great central mountain mass bordering Montana and continued on the north by the Clearwater and Cœur d'Alene Mountains. The eastern part of this mountain mass consists of pre-Cambrian and Paleozoic strata, the extreme western part of Triassic sediments. Between these two areas lies a great intrusive mass of granitic rocks, principally quartz monzonite, continued on the north and east by smaller intrusive areas. The northern or panhandle part of the State is mainly built up of the steeply inclined sedimentary strata of a thick pre-Cambrian complex known as the Belt series. The southern and southwestern parts of the State are covered by thick volcanic flows of Tertiary age and this area connects on the east with the lavas of the Yellowstone Park region and Utah. Toward the Nevada line rise a number of short ranges of the type of the Basin Ranges of that State, and the extreme southeastern part of Idaho is occupied by north-south ranges built up of folded and faulted Paleozoic and Mesozoic rocks which may be considered as a northward extension of the Wasatch Mountain system.

Pre-Cambrian deposits are not present in Idaho, except possibly in some of the less important districts in the northern part of the State, where mineralization seems to have accompanied the intrusion of diabase sills in the Belt series. Here as elsewhere two important kinds of deposits may be recognized—those which were formed shortly after the intrusion of the great central batholith of Jurassic rocks, probably in late Cretaceous time, and those of late Tertiary age which developed after the outburst of the Tertiary lavas in the southern and central parts of the State. The latter are confined to the gold and silver veins of Owyhee County and to a belt of lavas in the central part of the State, including such deposits as the Custer, in Custer County; the Singiser veins, in Lemhi County; and the Thunder Mountain deposits, in Idaho County.

A few unimportant deposits of copper and lead ores of uncertain age occur in the Paleozoic limestones of the ranges in the extreme southeast corner of the State.

The upper parts of the late Cretaceous ore deposits have to a considerable extent been removed by erosion and the parts now exposed contain ores formed at considerable depths. They are mainly fissure veins, but in places, as in southern Lemhi County and at the Wood River (Hailey) district, these merge into replacement deposits of galena in limestone. Contact-metamorphic deposits containing copper ores are developed on a rather extensive scale at Seven Devils, near the Oregon boundary line, and at White Knob, in the southeastern part of Custer County, but neither place has proved a large or steady producer.

The veins are contained in a great number of districts situated in and around the borders of the central granitic mass. Most of them carry gold and silver in a quartz gangue with abundant sulphides. Among the best-known districts are those of the Idaho Basin and the vicinity of Boise, adjoined on the east by the Sawtooth, Atlanta, and Rocky Bar districts. To the northeast are a number of minor districts in Lemhi County. To the north are those of Warren, Florence, Buffalo Hump, Dixie, Elk City, and Pierce. Still farther north, surrounding a smaller granitic intrusive mass, cluster the lead-silver veins of the Cœur d'Alene district. The late Cretaceous gold-bearing veins have usually yielded placer deposits of importance, many of which are still producing. The placer districts of greatest present importance are in the Idaho Basin, along the eastern boundary of Lemhi County, and at Pierce. The now largely exhausted placers of Warren, Florence, Elk City, and the Cœur d'Alene region should also be mentioned. The fine gold occurring in the sands of Snake River has been described frequently, but the actual production from these deposits is very small. Placers of diminishing importance are situated along Salmon and Boise rivers.

Among the Tertiary veins those near Silver City and De Lamar, in Owyhee County, have been and are still important producers. These veins cut through early Tertiary rhyolites and basalt and bear clear evidence of having been formed within short distances of the present surface.

Less well known are the veins at Custer and also those of a few districts like Singiser, in Lemhi County, which occur under similar conditions. Low-grade gold ores have been mined at Thunder Mountain, in Idaho County, and are said to form disseminations in rhyolitic tuffs. The Tertiary veins carry gold and silver with a very small amount of sulphides and no important amounts of the base metals.

Idaho contains few deposits of iron ore and none of them are mined at present. Iron Mountain, in Washington County, near Snake River, is the principal locality. No rare-metal deposits of importance occur in Idaho.

MONTANA.

The ore deposits of Montana occur in the western or mountainous half of the State. Though a few are contained in the detached front ranges, the major part are situated in a cluster in the southwestern part of the State, practically within the area included by Helena, Dillon, Missoula, and Virginia City. A few are situated north of the Yellowstone Park, and some others near the north end of the boundary line between Idaho and Montana, but the northern part of the Rocky Mountain area, though traversed by several high ranges, such as the Main Range and the Mission Range, is singularly barren of mineral deposits.

The great copper production of the Butte mines (Summit Valley district) overshadows all the rest of Montana's metallic output, but the State also produces annually several million dollars in gold and much silver and lead.

The geologic structure is complicated. The eastern part of the Rocky Mountain region shows a succession of dome-shaped uplifts in which the Mesozoic and Paleozoic rocks are successively exposed; the central core consists of igneous rocks or the pre-Cambrian complex. Of such character are the Bighorn, Little and Big Belt, Moccasin, Judith, Little Rocky, and Bearpaw mountains. The main mass of mountains west of Helena and Livingston consists of similar systems of faulted and interlocking uplifts which expose a great thickness of sedimentary rocks. As measured near Philipsburg, the sedimentary rocks consist of a great thickness of the Algonkian (pre-Cambrian) Belt series, amounting to about 13,000 feet of slates, limestones, and quartzite, then 1,200 feet of Cambrian, 300 feet of Silurian, 1,000 feet of Devonian, 1,200 feet of Mississippian, 700 feet of Pennsylvanian, 400 feet of Jurassic, and about 2,000 feet of Cretaceous rocks. In this western province, which seems to have suffered more erosion than the area farther east, a number of batholiths, or great masses of granite rocks, have been intruded. They are mainly quartz monzonites of late Cretaceous or earliest Tertiary age, and the largest of them extends from Helena for about 70 miles in a south-southwest direction to Butte and Dillon. Several smaller intrusive masses surround this large body. Extensive eruptions of andesite lavas preceded the main epoch of intrusion.

The thick Belt series, which begins in the latitude of Butte, occupies a large part of the northern mountains of Montana, but it is as a rule poor in mineral deposits and contains few intrusive bodies.

The ore deposits of Montana mainly cluster in and around the great intrusive bodies in the southwestern part of the State. They were evidently formed shortly after the intrusive activity, at considerable depths below the surface, and their upper parts have been removed by erosion.

Few pre-Cambrian deposits have been observed in Montana, and the probable occurrences seem to be limited to copper ores associated with intrusive sills in the Belt series on the east side of Missouri River.

Important deposits of late Tertiary age in flows of lavas are also scarce, though some veins occur in rhyolite between Helena and Butte. Some veins in the early Tertiary andesites southeast of Helena are probably genetically connected with the monzonite intrusions mentioned above as occurring in this region. Near Helena, Boulder, and Radersburg there is some indication that hot-spring activity and ore deposition have continued until a late geologic period, but definite information on the subject has not yet been published.

The deposits connected with intrusive bodies assume a great variety of form and content. Contact-metamorphic deposits are rare, but are known in the Elkhorn, Bannack, Argenta, Bear Gulch, Highland, and Philipsburg districts; the Cable gold mine, which has been a large producer, is located in the district last named. Contact deposits are also reported to exist near Garnet, in Granite County.

A number of deposits of the same general class are quartz veins, carrying gold, silver, or both. Of this kind are the formerly highly productive veins of Gloster and Marysville, near Helena; the Granite-Bimetallic mine, near Philipsburg; and many others. More commonly the quartz veins are rich in sulphides, which carry silver and gold in intimate combination with pyrite, galena, chalcopyrite, and zinc blende. Examples of this class are plentiful in almost all the mining counties, especially between Helena and Boulder, where the old camps of Alta, Comet, and Lump Gulch are located, and near Dillon, in Beaverhead County.

The vein systems of the Summit Valley district at Butte carry mainly copper, with small amounts of gold and silver, but there are also veins rich in silver and zinc.

Replacement deposits of silver-bearing galena occur in the Elkhorn district, southeast of Helena; at Barker, in the Little Belt Mountains; at Castle, in Meagher County, and at some other places, but the production obtained from these sources is not large at the present time.

The outlying uplifts in front of the main range contain some gold-bearing deposits of importance associated with intrusions of granitic or monzonitic porphyries. Most prominent are those of the Moccasin and Warm Springs districts in Fergus County, which are replacement deposits of gold-bearing quartz and fluorite in limestone, and in the Little Rocky Mountains, where the altered porphyry itself contains disseminated free gold in irregular bodies.

In Park County, north of the Yellowstone Park, are a number of little-known mining districts that contain gold-bearing quartz veins in places associated with sulphides and at one locality (in the Sheepeater district) with tungsten ores.

Near the north end of the Idaho boundary line, in the slates of the Belt series, are a number of vein deposits which show a close relationship to the Cœur d'Alene types, and contain galena and in places chalcopyrite. Genetically they are probably connected with intrusions of quartz monzonites. Among these districts the Libby, Iron Mountain, and St. Regis are the best known.

Wherever the deposits carry visible gold, placers have been formed in the gravels at lower elevations. Though the placer production is not large now and is derived mainly from dredging operations in the Alder Gulch (Virginia City) district, Montana was formerly noted for its rich gold-bearing gravels, which were worked not only at the place mentioned but also near Helena, Diamond City, Bannock, and at many other places.

No important deposits of iron are known in Montana. Manganese has been mined at one or two places in Jefferson County. There are few notable deposits of rare metals, though tungsten ores are found at Butte and in the Sheepeater district.

NEVADA.

Nevada is one of the most important metal-mining States of the West and has produced large quantities of gold, silver, and lead. At present her production of precious metals is again rising rapidly, and although the output of lead is much smaller than formerly the State is now an important producer of copper. The mining districts number about 200, and a glance at the map (Pl. IX, p. 200) will show that they are irregularly scattered over the State. The Great Basin, of which Nevada forms the larger part, is characterized by a great number of north-south ranges of complicated structure, separated by gravel-filled valleys. There is scarcely one of these ranges that is not mineralized to some extent. The great variety and the scattered distribution of the districts renders it difficult to give an adequate description of the metallic resources of the State within the space here allotted.

The northern boundary line of Nevada lies within the province of the Columbia River lava, and these flows of basalt and rhyolite extend for some distance into the State. At the bend of the California State line the Sierra Nevada forms the boundary of Nevada and a small part of that great range is included within its limits. A small area at the extreme south end of the State is occupied by the horizontal strata of the plateau province. Elsewhere the Basin Ranges are the dominating features, except where they are partly obliterated by Tertiary lava flows.

The ranges are built up of a great variety of rocks. The pre-Cambrian basement is visible at few places except in the extreme southern part of the State, close to Colorado River, where granitic rocks of that age appear. East of a line drawn a little east of Winnemucca through Austin to a point somewhat west of Tonopah, Paleozoic strata are the predominating rocks and there is little or no Mesozoic material present. The typical section at Eureka shows 7,600 feet of Cambrian shale, quartzite, and limestone, 5,000 feet of Ordovician limestone with some quartzite, 6,000 feet of Devonian limestone, and 11,300 feet of Carboniferous shale, quartzite, limestone, and conglomerate. This enormous thickness indicates the vicinity of a shore line, and we find, in fact, that west of the line mentioned above the Paleozoic disappears and is supplanted by a thick series of Triassic and Jurassic sediments. During the Paleozoic era western Nevada was a land area discharging sediments to the east. The Mesozoic sediments that accumulated in western Nevada were derived from a land area of uplifted Paleozoic strata in the eastern part of the State. The Triassic is typically exposed in the Humboldt Range and its limestone, slate, sandstones, and associated flow rocks attain a thickness of 10,000 feet. The Jurassic is present in the range about Winnemucca, and also in the Humboldt Range. Its total thickness is considerable but not exactly known on account of extensive folding and metamorphism; it consists mainly of slates with some limestones.

Intrusive igneous rocks of the type of granodiorite, quartz monzonite, or corresponding porphyries are abundant but form smaller areas. These irregular masses or batholiths are most common in the western part of the State adjacent to California, but they also occur in the Paleozoic ranges of eastern Nevada. Their age appears to range from latest Jurassic to earliest Tertiary; those near the Sierra Nevada are probably the older. Tertiary flow rocks—andesite, rhyolite, and basalt—are widely distributed and cover large areas, some ranges being entirely built up of them. The lavas near the northern boundary have already been referred to. Another large field lies adjacent to the southwest corner of Utah, and from that vicinity toward the California boundary the lava flows are especially prominent. Some of the western flows are probably of Eocene age, but it is clear that the eruptions continued throughout the Tertiary period. The old lavas contain in some places small intrusions of monzonite.

The sedimentary rocks of the ranges have been folded and faulted. At some places the faulting is comparatively old, but at other places it is later than some of the lavas and is still visible in the topographic forms; in this case the ranges are apt to be monoclinal in structure.

The ore deposits fall into three classes according to their age and occurrence—pre-Cambrian, Cretaceous or early Tertiary, and middle or late Tertiary.

The pre-Cambrian deposits are very poorly represented. There is, in fact, only one occurrence which may with some confidence be placed in this class. It is in the Copper King district, near Bunkerville, Clark County, where basic dikes carry copper, nickel, and platinum.

The Cretaceous or early Tertiary deposits are invariably connected with intrusions of granodiorite or quartz monzonite, and as they have suffered much erosion since their formation the now accessible parts were formerly deeply buried. Gold, silver, copper, lead, and zinc are the principal metals.

There are several types in this class. Contact-metamorphic deposits between or near the boundary of limestone and intrusive rocks are not abundant nor have they yielded a great production; copper is the most prominent metal. They have been noted at Yerington (Mason district), in Lyon County; at Coppereid, in Churchill County; at Adelaide and the Jackson Mountains, in Humboldt County; at

Cortez, in Lander County; at Bullion, Lone Mountain, Lime Mountain, and Contact, in Elko County; and at Ely and Ward, in White Pine County.

Replacement deposits of argentiferous galena in limestone or quartzite, usually situated at some distance from the contacts but apparently connected genetically with intrusive masses, have yielded a large but now diminishing output. At many places transitions into normal fissure veins are observed. To this class belong the celebrated deposits at or near Pioche, in southern Nevada and those at Eureka, in Eureka County, although in the latter place there is some doubt about the genetic connection, for both rhyolite and acidic intrusive rocks occur in the district. Other districts are the Lida, Montezuma, and Southern Klondike districts, in Esmeralda County; the Rye Patch mine in the Humboldt Range, Humboldt County; Cortez and Mill Canyon in Lander County; Mineral Hill, in Eureka County; and many others..

There are all transitions between these replacement deposits and silver and lead bearing veins in quartz gangue, often accompanied by rich silver minerals; these may cut through the sedimentary or the intrusive rocks and they occur in so many places that it would be difficult to enumerate all. At Austin, in the Reese River district, silver-bearing veins cut granite; at Belmont, Nye County, they are contained in Paleozoic sediments in which granite is intruded; at the Horn Silver district, 26 miles south-southwest of Goldfield, the veins are contained in early Paleozoic beds. In the oxidized parts of these veins horn silver and rich sulphantimonites and arsenites usually occur in abundance, changing to poorer sulphides below water level.

In still another group of veins gold predominates, locally as native gold accompanied by quartz gangue but more commonly in association with more or less sulphides and some silver. These veins are usually found in or near intrusive bodies. Examples of their occurrence are in the Silver Peak district, Esmeralda County; at Edgemont, in Elko County; at Osceola, in White Pine County; and in the Humboldt and Santa Rosa ranges, in Humboldt County. Many of the gold-bearing quartz veins occur in quartzite. At De Lamar, Lincoln County, for instance, a bed of quartzite penetrated by basic dikes has been impregnated with gold-bearing solutions and during its oxidation the gold was concentrated into a valuable mass of ore which for many years yielded a large production.

Pyritic disseminations, usually in porphyry, accompany this type of mineralization in many places, and where, as at Ely, White Pine County, these disseminations have been worked over by descending waters, important low-grade blanket deposits of chalcocite may be developed.

The various types mentioned may all occur in the same district, together forming a metallic aureole in and around intrusive masses.

The Tertiary mineralization of lavas in Nevada occurred on scale and with a diversity not equaled elsewhere in the Wester States. It took place at several epochs, and in places each eruptio was followed by the ascension of metal-bearing solutions, whic penetrated and altered great areas of the porous volcanic rock causing what is termed propylitization. The main epoch of mineralization appears to have been in the Miocene. The deposits are i veins or shear zones; some of them in extensive and irregular masse of silicified lavas. They occur in andesite, latite, dacite, or rhyolite but few of them in basalt. The metals are gold and silver, which i many places occur together, in a quartz and adularia gangue, mor rarely, as at Bullfrog, accompanied by calcite. Native gold is no common below the water level, though it is present, for instance, i the Round Mountain and National districts; above the water leve the oxidized material usually carries gold. Copper, lead, and zinc ar subordinate.

Districts of this type are abundant in western Nevada but are i fact scattered all over the State. Veins in andesite constitute th great Comstock deposits, in Washoe County; those of Tonopah Kawich, and Gold Crater, in Nye County; Tuscarora, Cornucopi and Stafford, in Elko County; and Seven Troughs, in Humbold County. Veins in rhyolite are abundant and usually carry gol and silver. As examples of such districts may be mentioned Fai view and Wonder, in Churchill County; Bullfrog, Silverbow, Eden Cactus Springs, Wilson's Camp, Stonewall Mountain, and Wellington in Nye County; Rawhide, Esmeralda County; Gold Circle, Elk County; and National, Humboldt County. The Goldfield mine which in late years have yielded a large production of gold, ar working irregular bodies of altered and silicified rocks in latit

By far the greater part of the gold and silver production of Nevad is derived from these Tertiary veins.

Placers have yielded large amounts of gold in Nevada, but in th absence of an abundant supply of water they are difficult to work Both Cretaceous and Tertiary deposits have contributed to the formation, though they are practically absent from many of th richest Tertiary deposits, such as the Comstock lode and the deposit of Tonopah and Goldfield.

The gold-bearing gravels have been worked at Tuscarora, in th Humboldt Range, at Round Mountain, at Battle Mountain, and numerous other places.

Iron ores are not of frequent occurrence. Brown iron ores a reported from Montello, Cobre, and Moor, Elko County, and fro Winnemucca, Humboldt County. Magnetite deposits are said occur some distance east of Lovelocks, Humboldt County; in th Cortez Mountains, Eureka County; and near Bullion and Doll Varden, Elko County. Little is known about their geologic relation

Nickel and cobalt ores occur in diorite and andesite of probably Mesozoic age, in the Cottonwood Canyon district, in the Humboldt Range.

Tungsten ores as wolframite or hübnerite are worked near Osceola, White Pine County, and near Browns station, in southwestern Humboldt County. In minor quantities the ore occurs in many Tertiary veins, for instance, at Tonopah and Round Mountain.

Quicksilver ore (cinnabar) is of widespread occurrence in western Nevada, in Humboldt, Nye, and Esmeralda counties, but its exploitation has been attempted only at Ione, in Nye County. The ore usually occurs in Tertiary deposits in rhyolite or andesite associated with stibnite, locally also with gold and silver. At Steamboat Springs, in Washoe County, the decomposed granite contains some cinnabar evidently deposited by hot springs. The deposits in the Humboldt Range are of uncertain age and occur in Triassic or Jurassic sedimentary rocks.

NEW MEXICO.

The ore deposits of New Mexico form a gradually widening belt extending through the central portion of the State from Colfax County, at the north, to the southwest corner; in this southern part the districts are scattered over a wide area between El Paso and Silver City. In spite of the fact that there are numerous districts, the production of New Mexico is not large. Gold, silver, copper, lead, and zinc are the principal metals of the output, and Grant and Socorro are the principal productive counties.

New Mexico contains several well-defined geologic provinces. Over the smaller eastern portion extend high plains or plateaus of horizontal or gently dipping Tertiary, Cretaceous, and Carboniferous sediments. About the middle of the State these almost connect with the similar strata of the plateau province which cover the northwestern part, their monotony being broken only by several minor uplifts like the Zuni Mountains.

Through the center of the State and trending north and south are a succession of ranges. Toward the Colorado boundary they are high and assume the type of the Rocky Mountain uplifts, with a central core of pre-Cambrian rocks surrounded by the upturned edges of Paleozoic and Mesozoic strata. Toward the south they are lower and are of the monoclinal type of the Basin Ranges, being limited on the east or west side by prominent faults. The pre-Cambrian is less prominently exposed and the sediments comprise a thick series. In the central part of the State a thin bed of Cambrian quartzite is covered by a few hundred feet of Ordovician, 200 feet of Devonian shale, 100 feet of Mississippian, and 3,000 feet of Pennsylvanian limestone and sandstone, the upper part including some of the "Red Beds." Above this lies a small thickness of probably Jurassic strata, and these are in turn covered by at least 3,000 feet of Cretaceous coal-bearing sandstones and shales. The southwest corner of New Mexico is occupied by a number of low ranges of the Arizona type, trending north-northwest, separated by wide desert plains and built up of folded and faulted Paleozoic and Mesozoic sediments; these ranges rarely have pronounced monoclinal structure. Lavas of late Tertiary age, chiefly andesitic and rhyolitic, cover a large space in the southwest, separating the province of the desert ranges from the plateau province. These lavas also extend toward the northeast and occupy large areas north of Santa Fe, but are here mainly basalts of latest Tertiary or even Quaternary age. Minor intrusions of quartz monzonites of late Cretaceous or early Tertiary age are known in nearly all the ranges and follow closely in their distribution the trend of the main mineral-bearing districts.

Deposits of pre-Cambrian age are known to occur in the northern ranges in Colfax, Taos, and Rio Arriba counties. Copper and gold are the principal metals. The deposits form either lenticular quartz veins or disseminations of sulphides in basic igneous rocks. At the Hamilton mine, in the Pecos district, Carboniferous strata cover the decomposed outcrops of a copper deposit of the latter kind. Many of the deposits contain minerals like garnet, tourmaline, and amphibole. The principal locality is that of the Hopewell and Bromide districts, in Rio Arriba County, where veins of this kind and placers derived from them have been mined.

In New Mexico, as elsewhere in the Western States, the most abundant deposits are those which are formed at the end of the Cretaceous or in the earliest Tertiary and which stand in close connection with granite or monzonite intrusions, surrounding them like metallic aureoles. There are several subdivisions of this genetic class which yield ores of gold, silver, copper, lead, and zinc.

Contact-metamorphic deposits in the silicate zone between limestone and intrusive rocks are more abundant than in any of the other States except possibly Arizona. They carry copper ores in the Elizabethtown, San Pedro, Organ, Jarilla, Hanover, and Hachita districts; lead and zinc ores are developed in the Magdalena and Tres Hermanas districts; iron ores at Hanover, Jones Camp, and other places. In all, 13 districts with such ores are known. Magdalena, San Pedro, and Hanover have yielded a considerable production of base metals.

Quartz veins almost invariably accompany the intrusions and are chiefly of the gold-bearing pyritic type, though in places they also carry silver, lead, and copper. The principal producing districts of this kind are Elizabethtown, Ortiz, White Oaks, and Pinos Altos. The silver veins form a smaller group, most of them occurring in Grant County Replacement deposits of argentiferous galena or silver ores are found at some little distance from the intrusive contact and have been mined in the Organ, Hermosa, Kingston, Hillsboro, Lake Valley, Georgetown, Victorio, Chloride Flat, and Granite Gap districts.

In connection with this general type of mineralization near intrusive bodies, there are at a few places, such as the Burro Mountains and Santa Rita, in Grant County, disseminations of cupriferous pyrite which are too poor to mine in themselves, but which have been enriched by a Recent or late Tertiary deposition of chalcocite formed by descending waters. These deposits now form large bodies of low-grade copper ore which are the main source of the copper production of the State.

Placer deposits which formerly were highly productive are worked at Elizabethtown, in Colfax County, in the Ortiz and San Pedro Mountains, at Hillsboro, and at Pinos Altos. Most of them are derived from the veins of early Tertiary age.

A distinctly later mineralization than that described above developed in some places in the lavas of middle or late Tertiary age, shortly after their eruption. It produced quartz veins carrying chiefly gold and silver and with certain characteristics indicating deposits near the surface. The principal districts are at Cochiti, in Sandoval County; at Hillsboro and in the Black Range, in Sierra County; and in the Mogollon district, in Socorro County. At present the principal production of gold and silver of the State is derived from the Mogollon district.

Concentrations of chalcocite in the sandstones of the "Red Beds" of Triassic or late Carboniferous age are found at Tecolote and other places in San Miguel County; in the Nacimiento and Zuni mountains, in the northwestern part of the State; at Estey, in Lincoln County; at Tularosa, in Otero County; and at several other places. The origin of these copper ores is still under discussion, but they have probably been concentrated by meteoric waters from small amounts of metal contained in the sandstones and this concentration has most likely been in progress ever since a water circulation was established in the strata involved. The deposits are in general independent of igneous rocks.

The iron ores consist chiefly of magnetite, occurring in contact-metamorphic deposits. They have been mined at Fierro, in Grant County. A bed of limonite in Cretaceous strata has also been mined near Glorieta, in Santa Fe County.

Bismuth ores occur in the San Andreas Range. Vanadium ores occur near Hillsboro and in the Caballo Range, in both places in connection with galena deposits in limestone. Some wolframite has been recovered from a quartz vein in limestone in the Victorio district, Luna County.

OREGON.

The map (Pl. XI, p. 246) shows plainly that the metal deposits of Oregon are confined to two small and widely separated regions. The northeastern part of the State, including Baker and Grant counties, contains a number of districts yielding mainly gold and silver but also some copper. The southwest corner, including parts of Douglas, Josephine, Jackson, and Coos counties, holds the extreme north end of the California gold belt, and the mines here yield gold, though there are also a few copper-bearing districts.

With the exception of these relatively small areas, the whole State is covered or underlain by flows of late Tertiary lavas, mainly andesites and basalts, or, as along the western coast, by Tertiary or Cretaceous sediments. Here and there the older rocks are exposed under the lavas, as in the Puebla Mountains, near the Nevada boundary line, and here some older mineralization may appear. In a few places, as in the Bohemia district, in the southern Cascade Mountains, and at a few points to the north in the same range, mineralization appears in the andesite rocks, resulting in deposits of gold and silver or quicksilver, but this, too, is unusual.

In geologic structure both regions belong to the Pacific type in which considerable regional metamorphism has been superimposed upon Paleozoic and Mesozoic rocks.

In southwestern Oregon the rocks are essentially the same as in the Sierra Nevada and in northern California. The structural trend here swings around from a northwesterly to a northeasterly direction. The sedimentary rocks comprise Devonian, Carboniferous, and Jurassic strata, the thickness of which is difficult to measure on account of the intense compression to which they have been subjected. These beds are intruded by granodiorite and its porphyries, as well as by serpentine and greenstone; the intrusions are earlie than the Cretaceous rocks, which also have a considerable development in the region. The gold-bearing quartz veins and the placer derived from their eroded outcrops stand in close connection with the intrusive porphyries and greenstones. Most of them are situated near Ashland and Jacksonville and especially north of Grants Pass. There are a great number of loosely defined districts, among which may be mentioned the Greenback, Gold Hill, Applegate, Jalico, Grave Creek, and Waldo. In all these districts placers accompany the veins. A few scattered gold deposits are situated in Coos and Curry counties. Gold-bearing black sands are mined at Gold Beach, Port Orford, and other places, the fine gold having probably bee transported to the sea by the river which drains the auriferou region.

Of the rarer metallic products, nickel ores have been mined a Riddles, in Douglas County. Platinum occurs rather commonly bu only in small quantities in the gold-bearing gravels and beach sands and is probably derived from the serpentine rocks. Small quantities of this metal are recovered. Quicksilver occurs as low-grade cinnabar ore at Black Butte, in Douglas County.

In the Blue Mountains of northeastern Oregon, which stand out above the surrounding lava flows, there is a highly compressed and not easily measured section of Paleozoic rocks and an overlying less highly altered series of Triassic sediments, the latter extending northeastward across Snake River and into Idaho, by the Seven Devils copper district. These sedimentary rocks are intruded by a number of smaller masses of granodiorite, in and around which the gold-bearing quartz veins cluster. The veins as a rule carry more or less sulphides and contain more silver than the gold veins of the southwestern part of the State. The richest veins are those of the Cracker Creek district, near Sumpter; others in the same vicinity in Baker County are the Bonanza, Cable Cove, Elkhorn, Connor Creek, Virtue, and Cornucopia. The adjoining Grant County contains similar veins at Susanville, Quartzburg, Granite, and Canyon City. Placers accompany the veins, especially at Sumpter, Baker City, and Canyon City. The last-named place marks the west end of this gold-bearing region, whose southeastern limit is at Humboldt Basin, in Malheur County.

SOUTH DAKOTA.

Cretaceous and Tertiary horizontal sediments cover almost the whole of the State of South Dakota, but in the southwest corner rises a prominent outlier of the Rocky Mountains, known as the Black Hills, which contains gold deposits of great economic importance. This group is similar to the uplifts of Wyoming and Montana, its center being an elliptical mass of pre-Cambrian schists and granites surrounded by outward-dipping Cambrian, Carboniferous, Jurassic, and Cretaceous beds. In the northern part of this uplift are masses, sheets, laccoliths, and dikes of porphyries of phonolitic, rhyolitic, and andesitic types, the age of which is considered to be Eocene.

Both pre-Cambrian and Tertiary (probably Eocene) ore deposits are found in the Black Hills. The pre-Cambrian deposits include lenticular veins in the schists, with quartz, native gold, and sulphides. Of these the most prominent example is the great Homestake mine at Lead, which is a low-grade but very large deposit of lenses in mica schist. These lenses of altered rock contain quartz stringers and much amphibole and carry native gold and auriferous sulphides. Somewhat similar but as yet not productive deposits occur in other parts of the pre-Cambrian area, in Lawrence, Pennington, and Custer counties. There are also low-grade copper deposits consisting of pyritic disseminations in schists, but at present none of these are productive.

The placer deposits, which now yield but little, were derived from veins in the schists. The oldest placers were accumulated in the conglomerate at the base of the Cambrian, when the Paleozoic sea first transgressed over the disintegrated pre-Cambrian rocks. Quaternary gold-bearing gravels lie in the present stream beds.

In the southern part of the Black Hills the granitic pre-Cambrian rocks hold pegmatite dikes which contain cassiterite, wolframite, and various tantalum-columbium minerals, also amblygonite and other lithia-bearing minerals.

A type of gold ore entirely different from that of the pre-Cambrian is connected with the intrusive porphyries, and the mineralization which produced it is probably of early Tertiary age. These gold ores, which do not carry visible metal, are siliceous replacements of Cambrian dolomite limestone, locally also of quartzite and shale; they occur in flat shoots following the stratification and are connected with usually barren vertical fissures that are believed to have formed the ducts for the passage of the solutions which caused the deposits. Cyanidation is the usual process of treatment and the ores, though now of medium to low tenor in gold, contribute largely to the production of the region. The ores are confined mainly to the northern part of the Black Hills, in Lawrence County. Wolframite occurs in one or two places in connection with these refractory siliceous ores.

TEXAS (WESTERN PART).

The western or trans-Pecos part of Texas contains a number of small mining districts in El Paso, Presidio, and Brewster counties. The principal metal production is limited to silver and quicksilver.

From eastern New Mexico a chain of short ranges indicated by the White Mountains, the Sacramento Range, and the Guadalupe Mountains extends southward into western Mexico; they are built up of Carboniferous and Cretaceous strata with small bodies of igneous rocks. A little farther south, in Presidio and Brewster counties, is a large area of volcanic flows which extends southward into Mexico.

The scattered mining districts in El Paso County have not yet proved of importance. In Presidio County is the Shafter district, which for several years has produced a notable amount of silver from an irregular oxidized deposit in Carboniferous limestone. East of the volcanic area mentioned the Cretaceous strata contain many small areas of volcanic flow rocks, in or near which, at Mariscal and Terlingua, important quicksilver deposits are located. Tin ore is mined near El Paso in the Franklin Mountains, where it occurs in a granitic rock.

UTAH.

The ore deposits of Utah are in the main confined to the western part of the State. They begin near the southwest corner of the State; thence the line between the productive and the barren region trends north-northwest, and in the latitude of Utah Lake and Salt Lake follows the crest of the Wasatch Range. The extreme northern part of the State, adjoining Idaho, contains few deposits. In the eastern region lie a few deposits of copper and rare metals in sandstone, on Grand River, a few iron deposits, and the gold-bearing district of the La Sal Mountains, near the Colorado boundary line.

Utah produces gold, silver, copper, and lead in large quantities and in the last few years the output of zinc ore has also been increasing.

The distribution of the districts corresponds to the two geologic provinces into which the State is divided. The unproductive area lies in the plateau province, in which Paleozoic, Mesozoic, and Tertiary strata are almost horizontal and igneous intrusions are generally absent. The ore-bearing area corresponds to the eastern part of the Great Basin, which is characterized by northward-trending ranges separated by desert plains. These ranges are built up of a thick series of Paleozoic sediments similar to that of eastern Nevada. Along the Wasatch Range Triassic, Jurassic, and Cretaceous rocks are also present. A typical section of the sedimentary strata comprises 10,000 or 12,000 feet of Cambrian quartzite, 1,500 feet of Silurian limestone, 1,250 feet of Devonian quartzite, 10,000 to 15,000 feet of Carboniferous limestone and quartzite, and finally about 5,000 feet of uppermost Carboniferous (Permian) or Triassic shales, sandstone, and limestone, the upper portion of which grades into the Mesozoic and consists in part of "Red Beds." In these folded and faulted sediments are numerous intrusions of granodiorite and quartz monzonite, and in places they are covered by Tertiary flow rocks like andesite, latite, and rhyolite. The largest area of intrusive rock is in Cottonwood Canyon, in the Wasatch Range, but even this is of comparatively small dimensions. The largest area of lavas is that of Beaver and adjacent counties in the southern part of the State, and this covers several thousand square miles. Toward the west it is continued across the Nevada line in the direction of Pioche.

The intrusive rocks are of post-Jurassic age; probably most of them date back to the late Cretaceous, but there is also reason to believe that granular rocks were intruded during early Tertiary time into some of the lofty volcanoes which at that time were situated in front of the Wasatch Range. The effusive rocks—the lavas—began to pour out early in the Tertiary period, and the maximum stage of their eruption falls in the later part of that period, though the basaltic eruptions which followed the andesite and rhyolite continued well into Quaternary time.

No pre-Cambrian ore deposits are known in Utah. As elsewher
the ores are, in a broad way, divided into those of Cretaceous age co
nected with intrusive rocks and those contained in lavas of late Te
tiary age. Owing to the presence at some places of early Tertia
intrusions into volcanic cones, the line between these two classes
here and there difficult to define strictly.

Contact-metamorphic deposits carrying copper and some gold ha
been noted in the Frisco district, Beaver County; at Clifton, Tooe
County; and in Cottonwood Canyon, Salt Lake County. Copp
deposits allied to them are also found at Bingham. Replacemen
deposits of silver-bearing galena occur in many districts and are as
rule intimately connected with fissure veins. Examples are furnishe
by the districts of Park City, Tintic, West Tintic, Cottonwood, Americ
Fork, Frisco, Star, Fish Springs, and Willow Springs. Replacemer
deposits of copper ores in limestone are worked at Bingham a
Tintic. Copper ores disseminated in monzonite and accompani
by tourmaline are mined at the Cactus mine, in the Frisco distric
Gold-bearing replacement deposits of limestone are mined on
extensive scale at Mercur, in the Oquirrh Range, and appear to
genetically connected with intrusive sheets of porphyry.

Gold and silver bearing fissure veins in or near intrusive rocks occ
at many places, among which may be mentioned Bingham and Tint
but they do not contribute a large share to the gold production of t
State. At Bingham there are widespread impregnations of cupr
erous pyrite, and its enrichment by chalcocite deposited by descen
ing solutions has given rise to the great low-grade copper depos
now worked by open-cut methods.

Placers derived from veins and other deposits connected with i
trusive rocks have yielded a small production in Utah. Such grav
have been worked at Bingham, in the La Sal Mountains, and alo
San Juan River.

Veins formed during the volcanic activity in middle Tertiary ti
occur mainly in andesites and rhyolites and carry chiefly gold a
silver; the principal localities are in the Kimberly, Mount Baldy, a
Ohio districts, in the volcanic center situated in Piute County; simil
veins are found in the Stateline district, bordering on Nevada,
Iron County.

Differing from all the preceding types are the metal-bearing san
stone ("Red Beds") of the plateau province. They show no evider
of genetic connection with igneous rocks. Silver and copper ores
this kind have been mined at Harrisburg (Silver Reef), in Washi
ton County, and similar copper ores in sandstone are reported fr
Uinta County, in northeastern Utah. Vanadium and uranium o
occur on Grand River near the Colorado line.

Some quicksilver is found in the gold ores of the Mercur or Ca
Floyd district, from which some production of this metal has be

reported, and a selenide and a sulphoselenide of mercury occur in veins of the Ohio district, near Marysvale.

Iron ores are found at several points. In the Iron Springs district, Iron County, and at Bull Valley, Washington County, are considerable bodies of magnetite in deposits of contact-metamorphic origin, between porphyry and limestone. A hematite deposit in Carboniferous limestone occurs at Rhodes Plateau, in Summit County, in the Uinta Mountains. Brown iron ores in small masses are not uncommon. One of these deposits, contained in probably Mesozoic sandstone, occurs in the northeast corner of the State near Vernal

WASHINGTON.

The metal production of the State of Washington includes gold, silver, copper, and lead, but the output of each metal is comparatively small. The southern half of the State and the Olympic Peninsula are almost wholly covered by Tertiary basaltic flows or by Cretaceous and Tertiary sediments barren of metal deposits. In contrast to this, the northern part of the Cascade Range, as well as the mountainous region extending eastward to Idaho along the international boundary, is built up of metamorphosed Paleozoic sediments, mainly slates with smaller masses of limestone, into which a number of granitic masses were intruded during late Cretaceous and early Tertiary time. Lavas of Tertiary age cover these rocks in a number of places.

Ore deposits of pre-Cambrian age have not been reported from Washington but may possibly occur in the Kettle River region, near the Canadian boundary. In the late Tertiary lavas, in spite of the large space they occupy, mineralization is of rare occurrence. There are, however, three prominent districts in the deposits of this kind, all in andesitic rocks. The first is at Monte Cristo, in Snohomish County, in the Cascade Range, where gold-bearing veins occur with abundant sulphides and arsenopyrite. The second is the Republic district, in Ferry County, in the northeastern part of the State, where gold-bearing veins with chalcedonic quartz still yield a notable production. The third is the Pierre Lake district, at Orient, in Stevens County, the output of which has been rather large for several years.

Practically all the other metal deposits of Washington are of greater geologic age and were probably formed shortly after the intrusion of granodiorite and similar rocks in the Paleozoic sediments at the close of the Cretaceous period. Extensive erosion of the upper parts of the veins has left exposed the deeper-seated portions. There are scattered districts of this kind in the Cascade Range, but none of them have as yet an important production. The Blewett or Peshastin district, on the eastern slope of the Cascades in Chelan County, is the best known. Rich gold ores have also been found in the Mount Baker district, in the northern part of the Cascade Mountains, where gold-bearing quartz veins associated with dikes of granodiorite have cut through peridotite and Paleozoic sediments.

Most of the producing districts are situated in Okanogan, Ferry, and Stevens counties, and many of them lie close to the Canadian boundary. Contact-metamorphic deposits carrying copper are represented by those at Buckhorn Mountain, in Okanogan County, and at the Belcher Camp, in Ferry County, near Republic. Silver-lead veins occur at Conconully (Ruby Hill), in Okanogan County; auriferous quartz veins on the Methow, in the same county, and in many other smaller districts. Lead ores, without much silver, occurring as replacements in limestone, are present near Bossburg and Colville and in the Metaline district, all in Stevens County, in the northeast corner of the State. There exists here between the town of Chewelah and Clark Fork of the Columbia a large body of granite intrusive in Paleozoic slates and limestones, and it is held that the numerous deposits in this part of the State were formed shortly after this intrusion.

The State contains few placer-mining districts of importance. Among those which yielded much gold in the early days may be mentioned the Swauk and Peshastin districts.

Iron ores are present at a number of places, but are not as yet utilized. Magnetite is found at Snoqualmie Pass, in King County, in connection with metamorphosed limestone, and on Skagit River, in the northern Cascades, as lenses in slate. Chromiferous magnetite appears at Clealum, in Kittitas County, on the contact between sandstone and serpentine. Brown iron ore and bog iron is found at several places in Stevens County—for instance, near Colville and Chewelah.

Of the rarer metals, nickel occurs in quartzose ores near Keller, Ferry County. Cassiterite or oxide of tin has been found in granite near Spokane. Wolframite, an important tungsten ore, occurs at the same place, and also in larger quantities, together with some bismuth minerals, in the quartz veins of the Deer Park and Spring Dale (Cedar Canyon) districts, in Stevens County. Arsenic has been recovered from the pyritic veins of the Monte Cristo district. A quartz vein carrying molybdenite has been discovered in the granite near Lake Chelan.

WYOMING.

The State of Wyoming contains few and scattered metal-bearing districts, and its production is limited to a little gold and copper. Wide stretches of high plains or high plateaus underlain by horizontal Tertiary and Cretaceous sediments extend over the eastern and southwestern parts. The several uplifts of the Rocky Mountains traverse the State in a northwesterly direction and comprise a number of high ranges, usually exposing a large core of pre-Cambrian rocks surrounded by upturned Paleozoic and Mesozoic sediments. There is little or no evidence of the late Mesozoic intrusions which in other parts of the West were so effective in promoting mineralization.

In the southern part of the State are the Laramie Hills, the Medicine Bow Range, and the Sierra Madre. In the northwestern part rise the Wind River, Teton, and Bighorn ranges, as well as the high plateaus of the Yellowstone Park region, the latter covered by a large area of effusive Tertiary lavas. If uplift and active water circulation produce mineral deposits, they surely ought to be abundant in this State, and if the metals could be concentrated by such circulation the pre-Cambrian igneous rocks, which undoubtedly contain traces of metals, would offer a source for such concentration. The general absence of ores of date later than the uplifts goes far to prove that metallization is dependent on other conditions.

Near the eastern boundary of the Yellowstone Park are some districts which have produced little and whose geologic features are not well known. Of the districts investigated practically all contain deposits of pre-Cambrian age, inclosed in the highly altered pre-Cambrian sediments or in the large masses of granitic and basic rocks intruded with them before the beginning of the Paleozoic era. The Laramie Hills contain many low-grade copper deposits in lenticular veins and disseminations in schists and granite. In the Medicine Bow Range are several districts yielding gold and copper; in the adjacent Sierra Madre, near the Colorado line, is the well-known Encampment district, which has yielded much copper and gold from veins and irregular deposits of pyritic ores enriched by chalcocitization in or near pre-Cambrian gabbros. Copper deposits are also found in similar rocks south of Casper. At several places the pre-Cambrian contains lenticular quartz veins with native gold; the best known deposits of this kind are at Atlantic and South Pass, in Fremont County. Placers below rich veins have been worked at the places mentioned and in several districts in the Medicine Bow Range. The basal conglomerate of the Cambrian in the region adjacent to the Black Hills is said to contain some placer gold.

Iron ores are found in the pre-Cambrian rocks. Iron Mountain, north of Cheyenne, in Laramie County, is a huge dike of ilmenite, in anorthositic rock, as yet not utilized. At Hartville, in the same county, lenses of hematite are worked, lying between the pre-Cambrian and the overlying Carboniferous. They are considered to be of pre-Cambrian age. Similar deposits are said to occur near Rawlins and in the Seminoe Mountains, in Carbon County.

There are few deposits of rare metals in Wyoming. Platinum, palladium, and other platinum metals are found associated with copper minerals in the Rambler mine, near Holmes, in Albany County. They are reported to be present in the concentrates in paying quantities.

PART II. CATALOGUE OF MINING DISTRICTS.

By JAMES M. HILL.

ACKNOWLEDGMENTS.

The writer is indebted to members of the United States Geological Survey who have supplied much first-hand information on many mining districts about which little has been known or published. The maps have been inspected by the men most familiar with the regions covered by them and have thus gained much in accuracy of location. To Mr. H. D. McCaskey the writer is indebted for advice as to method and arrangement and for constant cooperation throughout the work of compilation. Mr. Waldemar Lindgren has been a never-failing source of information. His careful scrutiny of the maps, lists, and text has added greatly to their value. Sincere thanks are due to him for his help and for the geologic introduction to this bulletin.

PLAN OF THE WORK.

In 1907 the United States Geological Survey issued, as a part of its publication "Mineral resources of the United States," a map showing by means of dots the relative location of the gold, silver, copper, lead, zinc, and quicksilver mining districts of the Western States. This map was published in one large sheet covering all the States west of the one hundred and third meridian, and the symbols used on it made no distinction for the predominant metal produced in each camp, with the exception of quicksilver.

Since the publication of that map many new districts have been added to the lists of producers. The Survey has also had the opportunity to study many regions about which there was little authentic information. The present bulletin is a revision and correction of the original map, based on the latest available information, with some added features which it is hoped will be useful to engineers, geologists, and others interested in the metal-mining industry of the Western States.

It is the hope of the writer that those interested will cooperate in the correction of mistakes and omissions in both maps and lists by notifying the Geological Survey of any errors they may discover.

The map of each State is published separately in order that it may be more easily handled. The scale of each map is about 40 miles to the inch. The State of California, on account of its large size, has been mapped in two parts, the dividing line being an entirely arbitrary one along the county lines south of the Mother Lode region. In California there are no mining districts as the term is used in other States—that is, there are no recorded boundaries to a particular district. The Survey has arbitrarily made the subdivision into districts for convenience of reference, the mines in a certain locality or near a particular town or camp being included in one district.

The location of the mining district is indicated on the maps by a symbol and a number. The different symbols indicate as far as possible the most important metal produced in each camp. This classification, however, was not always possible, as in some districts several metals are of equal importance, and other districts are in the prospect stage and their predominant metals are not certain or are unknown.

The number with each symbol refers to the list of the districts printed on the margin of each map and to the bibliography of that State. These lists are arranged alphabetically by counties and each map has one consecutive series of numbers.

The map of each State is accompanied by a few pages in which more information is given than can be shown on the map. This consists of the following items:

1. A number, which corresponds to the number given on the map.
2. The name and subnames of the district.
3. A list of the abbreviations for the metals produced in the camp, in the order of their importance. In this list the following abbreviations are used for the different metals:

Au......Gold.
Ag........Silver.
Cu.......Copper.
Pb.......Lead.
Zn.......Zinc.
Hg......Quicksilver.
Fe......Iron.
Cr.......Chromium.

Ti.......Titanium.
Mn.....Manganese.
Ni.......Nickel.
Co.......Cobalt.
W.......Tungsten.
Sb.......Antimony.
As.......Arsenic.

Bi......Bismuth.
U.......Uranium.
V........Vanadium.
Sn......Tin.
Mo .....Molybdenum.
Pt.......Platinum.
Pd......Palladium.

The last 12 metals are classed as rare, and where they are the most important metals the district is shown on the map as a rare-metal district. Metals found in the district but of relatively slight importance are indicated by the appropriate abbreviations in parentheses.

For some districts the list of metals produced is followed by "Pl," signifying that the production is largely from placer mines, or by "Pl and D" or "D and Pl," signifying that the production is from both deep and placer mines, the more important source being placed first. In all districts not marked in this way the production is derived from deep mines.

4. The shipping point of the camp, with the distance and direction of the camp from it and the railroad on which it is located—for example, "14 miles NNE. Winnemucca, S. P. R. R." The distance is estimated from a town in or from the center of the mining district, and where possible is the number of miles along the route followed by the United States mail. It is entirely possible and in many cases probable that there may be some shorter means of approach to the camp than that given, but some uniform method had to be adopted for the measurement of distances. Many of the distances given do not represent the distances as measured on the map, because roads are winding and a mail route may touch several other towns in its course to a given locality.

The following abbreviations are used for the railroads of the Western States:

A. & M. R. R. R.	Arcata & Mad River Railroad.
A. & N. M. R. R.	Arizona & New Mexico Railway.
A. & S. R. R.	Arizona & Swansea Railroad.
A. E. R. R.	Arizona Eastern Railroad.
Am. C. R. R.	Amador Central Railroad.
Ar. C. R. R.	Argentine Central Railway.
A. S. R. R.	Arizona Southern Railroad.
A. T. & S. F. R. R.	Atchison, Topeka & Santa Fe Railway.
B. & L. R. R.	Boca & Loyalton Railroad.
B. & S. R. R.	Barnwell & Searchlight Railway.
B. A. & P. R. R.	Butte, Anaconda & Pacific Railway.
B. B. & B. C. R. R.	Bellingham Bay & British Columbia Railroad.
B. C. R. R.	Butte County Railroad.
B. G. R. R.	Bullfrog Goldfield Railroad.
B. H. & F. P. R. R.	Black Hills & Fort Pierre Railway (Chicago, Burlington & Quincy Railroad).
C. & N. W. R. R.	Chicago & North Western Railway.
C. & P. S. R. R.	Columbia & Puget Sound Railroad.
C. & S. R. R.	Colorado & Southern Railway.
C. & W. R. R.	Colorado & Wyoming Railway.
C. B. & Q. R. R.	Chicago, Burlington & Quincy Railroad.
C. G. W. R. R.	Chicago Great Western Railroad.
C. M. & P. S. R. R.	Chicago, Milwaukee & Puget Sound Railway.
C. M. R. R.	Colorado Midland Railway.
C. R. & S. J. R. R.	Crystal River & San Juan Railway.
C. R. I. & P. R. R.	Chicago, Rock Island & Pacific Railway.
C. R. R. of O.	Central Railroad of Oregon.
C. S. & C. C. R. R.	Colorado Springs & Cripple Creek District Railway.
D. & R. G. R. R.	Denver & Rio Grande Railroad.
D. B. & W. R. R.	Denver, Boulder & Western Railroad.
D. N. W. & P. R. R.	Denver, Northwestern & Pacific Railway.
E. & P. R. R.	Eureka & Palisade Railway.
E. P. & S. W. R. R.	El Paso & Southwestern Railroad.
E. R. R. of N. M.	Eastern Railway of New Mexico.

G. & P. R. R	Gilmore & Pittsburgh Railroad.
G. C. R. R	Grand Canyon Railway.
G. N. R. R	Great Northern Railway.
G. V. G. & N. R. R	Gila Valley, Globe & Northern Railway.
I. & W. N. R. R	Idaho & Washington Northern Railroad.
I. N. R. R	Idaho Northern Railway.
L. H. P. & P. R. R	Laramie, Hahns Peak & Pacific Railway.
L. V. & T. R. R	Las Vegas & Tonopah Railroad.
N. C. B. R. R	Nevada Copper Belt Railroad.
N. C. N. G. R. R	Nevada County Narrow Gage Railroad.
N. C. O. R. R	Nevada-California-Oregon Railway.
N. C. R. R	Nevada Central Railroad.
N. N. R. R	Nevada Northern Railway.
N. P. R. R	Northern Pacific Railway.
N. W. P. R. R	Northwestern Pacific Railroad.
O. & E. R. R	Oregon & Eureka Railroad.
O. & S. E. R. R	Oregon & Southeastern Railroad.
O. S. L. R. R	Oregon Short Line Railroad.
O. W. R. R. & N. Co	Oregon-Washington Railroad & Navigation Co.
P. & I. N. R. R	Pacific & Idaho Northern Railway.
P. C. R. R	Pacific Coast Railway.
P. R. R. L. & P. Co	Portland Railway, Light & Power Co.
P. T. S. R. R	Port Townsend Southern Railroad.
R. C. B. H. & W. R. R	Rapid City, Black Hills & Western Railroad.
R. G. S. R. R	Rio Grande Southern Railroad.
R. G. W. R. R	Rio Grande Western Railway.
R. R. V. R. R	Rogue River Valley Railway.
St. L. R. M. & P. R. R	St. Louis, Rocky Mountain & Pacific Railway.
S. & E. R. R	Saratoga & Encampment Railway.
S. & I. E. R. R	Spokane & Inland Empire Railroad.
S. D. & C. R. R	San Diego & Cuyamaca Railway.
S. F. C. R. R	Santa Fe Central Railway (New Mexico Central Railroad).
S. F. P. & P. R. R	Santa Fe, Prescott & Phoenix Railway.
S. L. & M. R. R	Salt Lake & Mercur Railroad.
S. N. R. R	Silverton Northern Railroad.
Sil. P. R. R	Silver Peak Railroad.
S. P. & S. R. R	Spokane, Portland & Seattle Railway.
S. P. L. A. & S. L. R. R	San Pedro, Los Angeles & Salt Lake Railroad.
S. P. R. R	Southern Pacific Railroad.
S. R. R	Silverton Railway.
S. R. R. of Cal	Sierra Railway of California.
Sier. V. R. R	Sierra Valley Railroad (Sierra & Mohawk Railway).
Sump. V. R. R	Sumpter Valley Railway (Oregon).
S. V. & E. R. R	Sacramento Valley & Eastern Railroad.
T. & G. R. R	Tonopah & Goldfield Railroad.
T. & P. R. R	Texas & Pacific Railway.
T. & T. R. R	Tonopah & Tidewater Railroad.
T. B. R. R	Twin Buttes Railroad.
T. E. R. R	Tacoma Eastern Railroad.
U. P. R. R	Union Pacific Railroad.
U. R. R	Uintah Railway.
U. V. & P. R. R	United Verde & Pacific Railway.
V. & T. R. R	Virginia & Truckee Railway.

W. & M. R. R. R.	Wyoming & Missouri River Railroad.
W. & N. W. R. R.	Wyoming & Northwestern Railway.
W. I. & M. R. R.	Washington, Idaho & Montana Railway.
W. P. R. R.	Western Pacific Railway.
Y. R. R.	Yreka Railroad.
Y. V. R. R.	Yosemite Valley Railroad.

5. A statement of the geologic formation of the region, intended to give simply a general idea of the rocks in which the deposits occur. The attempt has been made to name the oldest rocks first, using the terms pre-Cambrian schists, granite, or complex. The term complex is used in districts where schist, gneiss, and granite are found in intimate association. The Paleozoic or Mesozoic limestones, slates, quartzites, etc., are all combined under the terms Paleozoic or Mesozoic sediments. Intrusive rocks are said to "cut" the older formations, and volcanic flows "cap" the other formations. Where the relation is not known only the names of the rocks are given, as Paleozoic sediments, granite, andesite. In placer districts the gravels have been classed as follows:

Stream gravels, those of the present stream channel.

Terrace gravels, those of the present stream but found above the present level o the stream.

Beach gravels, confined to the shores of the Pacific Ocean.

Glacial gravels, moraines and outwash from the glaciers.

Tertiary river gravels, like the buried channels of the Sierra Nevada in California.

6. The kind of deposits found in the region. No attempt ha been made to discuss the deposits; simply their general character is mentioned in the belief that it may be of use. The following terms have been used with the meanings indicated, which are sanctioned by the United States Geological Survey:

Vein.—A single body of minerals occupying or following a fissure, both walls o which generally, though not invariably, are well defined. Where several veins are s closely spaced that the ground between them becomes in places ore bearing and in its whole width constitutes an ore body the assemblage is called a lode. In thi bulletin the term vein is used for both veins and lodes.

Contact-metamorphic deposits.—Ore deposits which occur at or near the contacts o intrusive rocks with sedimentary beds and which carry minerals characteristic of con tact metamorphism, such as garnet, pyroxene, and epidote.

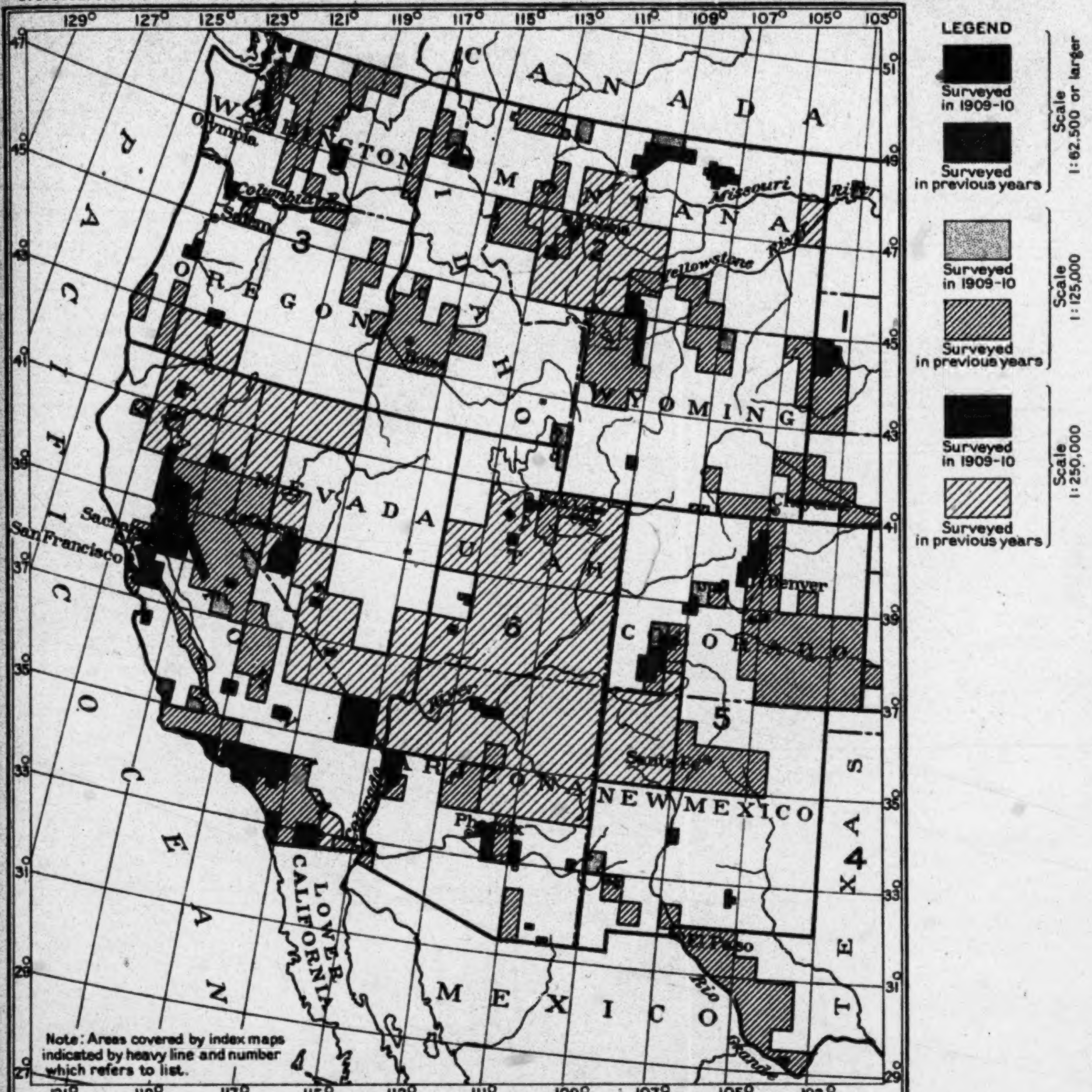
Replacement deposits.—Masses of ore and gangue formed by the alteration of lime stone, dolomite, and other rocks. Usually irregular in form and in many places grading into country rock.

Disseminated deposits.—Deposits containing ore minerals scattered throughout th rock, such as chalcocite occurring in grains through granite porphyry. The tern "impregnations" is sometimes applied to deposits of this type.

Stockwork.—A deposit consisting of a complex system of small fissure veins.

Lenses.—Roughly tabular bodies which diminish in size vertically and horizontally.

7. A bibliography of Survey publications relative to the district It is fully realized that many articles bearing on the metal industr which appear in mining, engineering, and scientific journals are of grea


LEGEND
Surveyed in 1909-10
Surveyed in previous years
Scale 1:62,500 or larger
Surveyed in 1909-10
Surveyed in previous years
Scale 1:125,000
Surveyed in 1909-10
Surveyed in previous years
Scale 1:250,000
CANADA
WASHINGTON
MONTANA
OREGON
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
CALIFORNIA
ARIZONA
NEW MEXICO
TEXAS
MEXICO
LOWER CALIFORNIA
PACIFIC OCEAN
Olympia
Salem
Columbia R.
Missouri River
Yellowstone River
Sacramento
San Francisco
Cheyenne
Denver
Santa Fe
Phoenix
El Paso
Rio Grande
Colorado
1
2
3
4
5
6
Note: Areas covered by index maps indicated by heavy line and number which refers to list.

MAP OF THE WESTERN STATES, SHOWING AREAS COVERED BY TOPOGRAPHIC SURVEYS AND THE SCALE EMPLOYED FOR EACH AREA

100 0 100 200 300 Miles

1912

JULIUS BIEN CO. LITH. N.Y.

value and should be included in any complete bibliography of the mining industry of the United States. The great mass of literature bearing on the subject of mining and the relatively short time available for this revision and compilation made it necessary to limit the publications listed, except as stated below, to those issued by the United States Geological Survey. These consist of several series, which are indicated by the following abbreviations:

M	Monograph.
P. P	Professional Paper.
Bull	Bulletin.[1]
W. S. P	Water-Supply Paper.
Min. Res	Mineral Resources.[1]
Folio	Folio of Geologic Atlas.
Top. sheet	Sheet of Topographic Atlas.

Colorado, South Dakota, Washington, and Wyoming are the only States of the Cordilleran region which maintain geological surveys. Their publications are referred to in the list.

The following example will show the method of presenting the information indicated in the preceding paragraphs. The district is in New Mexico.

9. **Organ.** Pb, Ag, Cu.
15 miles NE. Las Cruces, A. T. & S. F. R. R., stage line.
Paleozoic sediments cut by quartz monzonite.
Veins, contact metamorphic, replacements.
Lindgren, W., and Graton, L. C., A reconnaissance of the mineral deposits in New Mexico: Bull. 285, 1906, pp. 74-86.

This interpreted means: The deep mines of the Organ district, which is numbered 9 on the map of New Mexico, produce lead, silver, and copper, lead predominating. The central part of the district is 15 miles northeast of the shipping point, Las Cruces, on the Atchison, Topeka & Santa Fe Railway, with which it is connected by stage. The region is underlain by Paleozoic sediments intruded by quartz monzonite. The ores occur in veins, in contact-metamorphic deposits at the contacts of the sediments and intrusive rock, and as replacement bodies in the sediments. Notes on the district are given on pages 74 to 86 of Bulletin 285 of the Geological Survey, published in 1906. (Other Survey publications on this district are cited in the list on p. 230.)

The Thirty-second Annual Report of the Director of the Survey contains two maps showing the areas covered by geologic and topographic surveys. Plates I and II are adapted from these maps and show what has been accomplished by the Survey in the mapping and study of the geology of the Western States. Plate I shows the areas covered by topographic surveys. In this work the unit of survey is a quadrangle 15 minutes, 30 minutes, or 1 degree in extent each way, covering an area of one-sixteenth, one-fourth, or one

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[1] In the series of bulletins entitled "Contributions to economic geology" and in the volumes of Mineral Resources are given bibliographies on the several metals.

EXPLANATION OF PLATE II.

The numbers indicate Survey publications, as shown in the following list:

ARIZONA.

1. Bisbee, P. P. 21, Folio 112.
2. Bradshaw Mountains, Folio 126.
3. Clifton, P. P. 43, Folio 129.
4. Globe, P. P. 12, Folio 111.

CALIFORNIA.

1. Bidwell Bar, Folio 43.
2. Big Trees, Folio 51.
3. Colfax, Folio 66.
4. Downieville, Folio 37.
5. Jackson, Folio 11.
   Mother Lode district, Folio 63.
6. Lassen Peak, Folio 15.
7. Marysville, Folio 17.
8. Placerville, Folio 3.
9. Pyramid Peak, Folio 31.
10. Redding, Folio 138.
11. Sacramento, Folio 5.
12. San Luis, Folio 101.
13. Santa Cruz, Folio 163.
14. Smartsville, Folio 18.
    Nevada City, Folio 28.
15. Sonora, Folio 41.
16. Truckee, Folio 39.

COLORADO.

1. Anthracite, Folio 9.
2. Apishapa, will be folio.
3. Aspen, M. XXXI, $3.60.
4. Crested Butte, Folio 9.
5. Durango, will be folio.
6. Elmoro, Folio 58.
7. Engineer Mountain, Folio 171.
8. Georgetown, P. P. 63.
9. La Plata, Folio 60.
10. Leadville, M. XII, $8.40.
11. Needle Mountains, Folio 131.
12. Nepesta, Folio 135.
13. Ouray, Folio 153.
14. Pikes Peak, Folio 7.
    Cripple Creek, P. P. 54.
15. Pueblo, Folio 36.
16. Rico, Folio 130.
17. Silverton, Folio 120.
18. Spanish Peaks, Folio 71.
19. Telluride, Folio 57.
20. Tenmile, Folio 48.
21. Walsenburg, Folio 68.
22. Breckenridge, P. P. 75.

IDAHO.

1. Bitterroot Range and Clearwater Mountains, P. P. 27.
2. Boise, Folio 45.
3. Cœur d'Alene, P. P. 62.
4. Nampa, Folio 103.
5. Silver City, Folio 104.

MONTANA.

1. Butte, Folio 38, P. P. 74.
2. Fort Benton, Folio 55.
4. Little Belt Mountains, Folio 56.
5. Livingston, Folio 1.
6. Marysville, P. P. 57.
7. Philipsburg, will be folio and P. P. 78.
8. Three Forks, Folio 24.

NEVADA.

1. Bullfrog, Bull. 407.
2. Comstock lode, M. III, $11; IV, $1.50.
3. Ely.
4. Eureka, M. VII, $1.20; VIII, $1.10; XX, $5.25.
5. Goldfield, P. P. 66.
6. Silver Peak, P. P. 55.
7. Tonopah, P. P. 42.
8. Southwestern Nevada and eastern California, Bull. 308.

NEW MEXICO.

Geology and ore deposits, P. P. 68.

1. Silver City, will be folio.

OREGON.

1. Coos Bay, Folio 73.
2. Crater Lake, P. P. 3.
3. Port Orford, Folio 89.
4. Riddles, will be folio.
5. Roseburg, Folio 49.

SOUTH DAKOTA.

1. Belle Fourche, Folio 164, P. P. 65.
2. Deadwood, P. P. 26, will be folio.
3. Edgemont, Folio 108.
4. Oelrichs, Folio 85.
5. Rapid, P. P. 26, will be folio.

TEXAS.

1. El Paso, Folio 166.

UTAH.

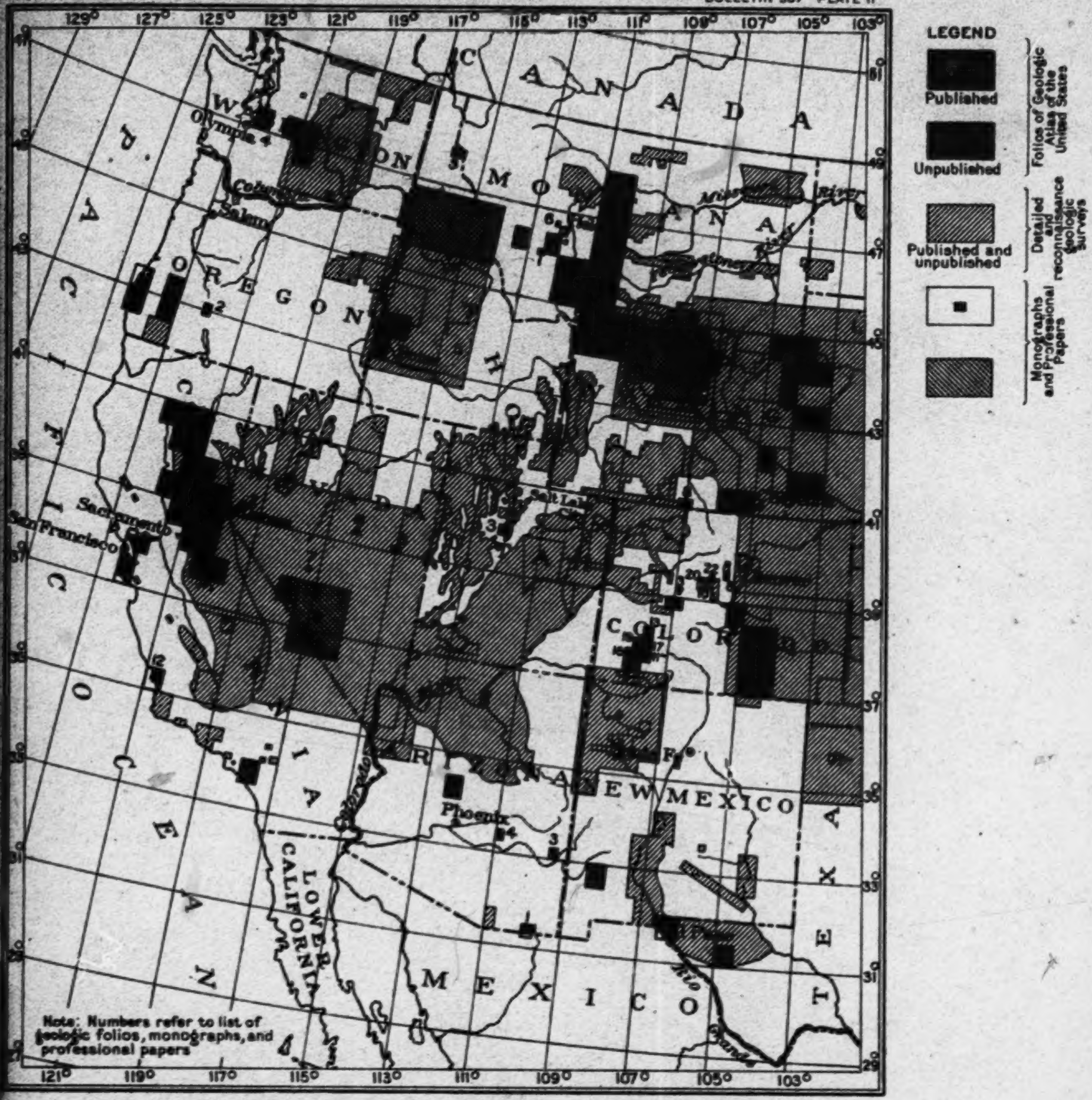
1. Bingham, P. P. 38.
3. Tintic, Folio 65.

WASHINGTON.

1. Ellensburg, Folio 86, P. P. 19.
2. Mount Stuart, Folio 106.
3. Snoqualmie, Folio 139, P. P. 19.
4. Tacoma, Folio 54.

WYOMING.

1. Aladdin, Folio 128, P. P. 65.
2. Bald Mountain, Folio 141.
3. Canyon, M. XXXII, $2.45.
4. Cloud Peak, Folio 142.
5. Crandall, M. XXXII, $2.45.
6. Dayton, Folio 141.
7. Devils Tower, Folio 150.
8. Encampment, P. P. 25.
9. Fort McKinney, Folio 142.
10. Gallatin, M. XXXII, $2.45.
11. Hartville, Folio 91.
12. Ishawooa, M. XXXII, $2.45.
13. Lake, M. XXXII, $2.45.
14. Laramie, Folio 173.
15. Newcastle, Folio 107.
16. Sherman, Folio 173.
17. Shoshone, M. XXXII, $2.45.
18. Sundance, Folio 127.
19. Bighorn Basin, P. P. 53.
20. Bighorn Mountains, P. P. 51.


LEGEND
Published
Unpublished
Folios of Geologic Atlas of the United States
Published and unpublished
Detailed and reconnaissance geologic surveys
Monographs and Professional Papers
CANADA
WASHINGTON
MONTANA
OREGON
IDAHO
NEVADA
UTAH
WYOMING
COLORADO
CALIFORNIA
ARIZONA
NEW MEXICO
TEXAS
MEXICO
LOWER CALIFORNIA
PACIFIC OCEAN
Olympia
Salem
Sacramento
San Francisco
Salt Lake
Phoenix
Columbia
Missouri River
Yellowstone
Colorado
Rio Grande
129° 127° 125° 123° 121° 119° 117° 115° 113° 111° 109° 107° 105° 103°
121° 119° 117° 115° 113° 111° 109° 107° 105° 103°
49 47 45 43 41 39 37 35 33 31 29 27
Note: Numbers refer to list of geologic folios, monographs, and professional papers

MAP OF THE WESTERN STATES, SHOWING AREAS COVERED BY GEOLOGIC SURVEYS AND KIND OF WORK DONE

100 0 100 200 300 Miles

1912

[illegible]

square degree. A quadrangle is designated by the name of some well-known place or feature in it. The unit of publication is an atlas sheet 16½ by 20 inches, and each sheet is a topographic map of one quadrangle. As the atlas sheets are uniform in size, the greater the area covered the smaller the scale of the map. The scale of the 1-degree sheet is 1:250,000, that of the 30-minute sheet is 1:125,000, and that of the 15-minute sheet is 1:62,500. The names of adjoining quadrangles for which sheets have been published are printed on the margins. The cultural features, such as roads, railroads, cities, and towns, as well as all lettering, are shown in black; the water features in blue; the features of relief—hills, mountains, etc.—by brown contour lines. The contour interval varies with the scale of the map and the relief of the country. Some maps of areas that are economically important are not in conformity with the general scheme outlined above.

"Index maps" on a scale of about 40 miles to the inch, showing the location and names of quadrangles represented by published topographic sheets, also names and numbers of geologic folios, have been prepared and may be obtained free on application to the Director of the Survey at Washington. As it is impossible to show distinctly the names of the quadrangles on Plate I, the areas covered by index maps are indicated by heavy lines and by numbers which correspond to those in the subjoined list:

	Form No.
1. North and South Dakota	9-323 q
2. Montana, Idaho, and Wyoming	9-323 k
3. Oregon and Washington	9-323 o
4. Texas and Oklahoma	9-323 j
5. Colorado and New Mexico	9-323 m
6. Utah and Arizona	9-323 l
7. California and Nevada	9-323 n

The topographic maps are sold at 5 cents a sheet of standard size, or $3 a hundred if at least 100 are ordered at one time. Prepayment is required, and may be made by money order payable to the order of the Director of the United States Geological Survey, or in stamps or cash—the exact amount.

Plate II shows the areas covered by geologic surveys. The numbers refer to the list of folios, professional papers, and monographs on the page facing the plate.

Geologic maps of the quadrangles covered by the topographic maps are generally published in the form of folios. On these maps the areal geology, underground structure, and mineral deposits are represented by colors and patterns. Each folio contains other maps, descriptive text, etc. The price of folios is 25 cents each, as a rule; a few that are unusually large are sold for 50 cents. A general circular on geologic folios may be had on application.

Professional papers are distributed free of charge on application to the Director of the Geological Survey, It sometimes happens, however, that they are out of stock; in that case they can usually be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a nominal cost. Monographs are sold at the prices indicated in the list.

It is impossible to indicate the areas described in the other publications of the Survey. Those which deal particularly with mining are "Mineral Resources" and some of the bulletins. A complete list of Survey publications, revised quarterly, may be had on application to the Director.

CLASSIFICATION OF MINING DISTRICTS.

Fourteen States west of the one hundred and third meridian are represented in this report as producers of gold, silver, copper, lead, zinc, quicksilver, iron, chromium, manganese, and the rare metals.

In these States there are more than 1,479 mining districts recognized by the United States Geological Survey, that number being shown on the maps. Some districts are not shown owing to lack of knowledge or lack of space. The scale of the map limits the number of mining districts which can be shown as distinct units. In Gilpin County, Colo., there are about 12 districts, which have been grouped into three on the map. The Mother Lode region of California is another example of the necessity for combining districts on account of lack of space.

The classification of the districts by predominant metals was made on the basis of the production of the districts for the period from 1902 to 1908, as reported to the United States Geological Survey. The following table shows the number of districts in each State which produce the several metals, as thus classified:

Distribution of the mining districts in the Western States according to the predominant metal.

State.	Gold.	Silver.	Copper.	Lead.	Zinc.	Quicksilver.	Iron.	Rare metals.	Unknown.	Total.
Arizona	67	11	46	7		1		1	3	136
California, northern counties	178	1	13			16	14			222
California, southern counties	129	12	19	7		11	9	3	1	191
Colorado	60	21	20	16	1		1	8	5	132
Idaho	84	14	13	22						133
Montana	69	7	11	15	1		1		3	107
Nevada	105	38	17	14	1	1	2	2	2	182
New Mexico	26	16	27	11	2		3			85
Oregon	63	1	7			2				73
South Dakota	14	1	2	3			2	4		26
Texas		4	2		1	3		1		11
Utah	22	20	15	14			6	3	6	86
Washington	31	5	11	6			3	3		59
Wyoming	13		19				3		1	36
	861	151	222	115	6	34	44	25	21	1,479

This table takes no account of the other metals found in a camp. In most regions several metals are produced, and in many districts it is difficult to say which is the most important product. Where there are few mines the production of one of them may greatly influence the classification. For instance, in a copper camp one producer may obtain a large amount of gold from his ore. In case this gold value exceeds the value of all the copper produced in the camp it would be classed as a gold district, even though it is generally spoken of as belonging to the copper class. The silver camps are particularly open to question, for there are few mines producing principally silver, yet in 151 districts in the Western States silver has a greater value than the other metals produced. The table is inserted for the reason that it gives the number of districts in each State in which one metal has a greater value than the others produced.

The above statement is applicable to the tabulated statements by counties for each State.

For a truer record of the relative importance of the metals produced by the mining districts of the Western States the reader is referred to the volumes of "Mineral Resources" published by the United States Geological Survey.

ARIZONA.

In 12 counties of Arizona there are 136 mining districts. Of these the predominant metal is unknown in 3, and in 1 tungsten minerals are produced exclusively; 67 districts produce more gold than any other metal, 46 more copper, 11 more silver, and 7 more lead. Quicksilver is recoyered in 1 district.

Distribvtion of the predominant metals produced in the mining districts of Arizona.

County.	Gold.	Silver.	Copper.	Lead.	Quicksilver.	Rare metals.	Unknown.	Total.
Cochise	5	....	5	1	....	1	1	13
Coconino	....	....	3	....	....	....	....	3
Gila	4	....	6	....	....	....	....	10
Graham and Greenlee	1	1	5	1	....	....	....	8
Maricopa	4	....	1	....	....	....	....	5
Mohave	19	2	2	2	....	....	....	25
Pima	5	1	8	1	....	....	2	17
Pinal	4	1	5	....	....	....	....	10
Santa Cruz	3	6	2	....	....	....	....	11
Yavapai	16	....	4	....	....	....	....	20
Yuma	6	....	5	2	1	....	....	14
	67	11	46	7	1	1	3	136

MINING DISTRICTS IN ARIZONA.

[See Pl. III. Additional references may be found in Mineral Resources for 1910 and 1911.]

COCHISE COUNTY.

1. **California (Paradise).** Pb, Ag, Cu, Au.
   15 miles NW. Rodeo, N. Mex., E. P. & S. W. R. R.
   Paleozoic (?) limestones cut by granite porphyry.
   Contact metamorphic, veins.
   Min. Res. 1905, pp. 144–145.
   1906, p. 154.
   1907, pt. 1, p. 160.
   1908, pt. 1, p. 297.
   1909, pt. 1, p. 242.
2. **Courtland (Turquoise).** Cu, Au, Ag.
   Station E. P. & S. W. R. R.
   Paleozoic sediments cut by granite porphyry.
   Replacements, veins in porphyry.
   Ransome, F. L., The Turquoise copper-mining district, Arizona: Bull. 530, 1912.
   Min. Res. 1905, p. 146.
   1906, p. 156.
   1907, pt. 1, p. 162.
   1908, pt. 1, pp. 205, 298.
   1909, pt. 1, pp. 167, 243.
3. **Dos Cabezas.** Au, Ag, Pb, Fe, Cu. (D, Pl.)
   15 miles E. Willcox, S. P. R. R.
   Min. Res. 1906, p. 155.
   1907, pt. 1, p. 161.
   1908, pt. 1, p. 297.
   1909, pt. 1, p. 242.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIREC

LIST OF MINING DISTRICTS

COCHISE COUNTY

1. California (Paradise)
2. Courtland (Turquoise)
3. Dos Cabezas
4. Dragoon
5. Huachuca (Hartford)
6. Johnson (Cochise)
7. Pearce
8. Teviston
9. Tombstone
10. Warren (Bisbee)
11. Whetstone (Benson)
12. Winchester
13. Yellowstone (location uncertain)

COCONINO COUNTY

14. Francis
15. Grand Canyon
16. Jacobs Lake (Kaibab Plateau)

GILA COUNTY

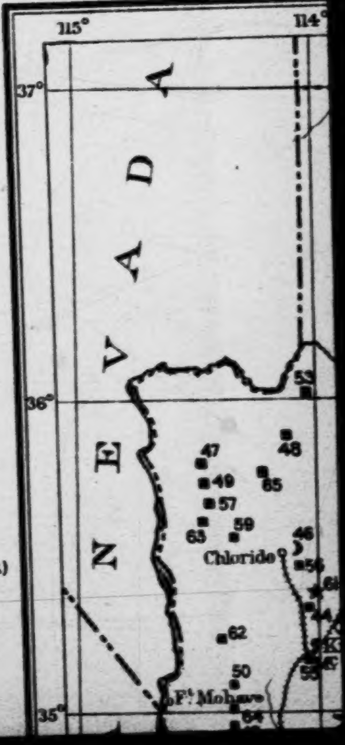
17. Banner (Troy)
18. Black Warrior
19. Christmas (Saddle Mountain, San Carlos)
20. Dripping Springs
21. Ellison
22. Globe

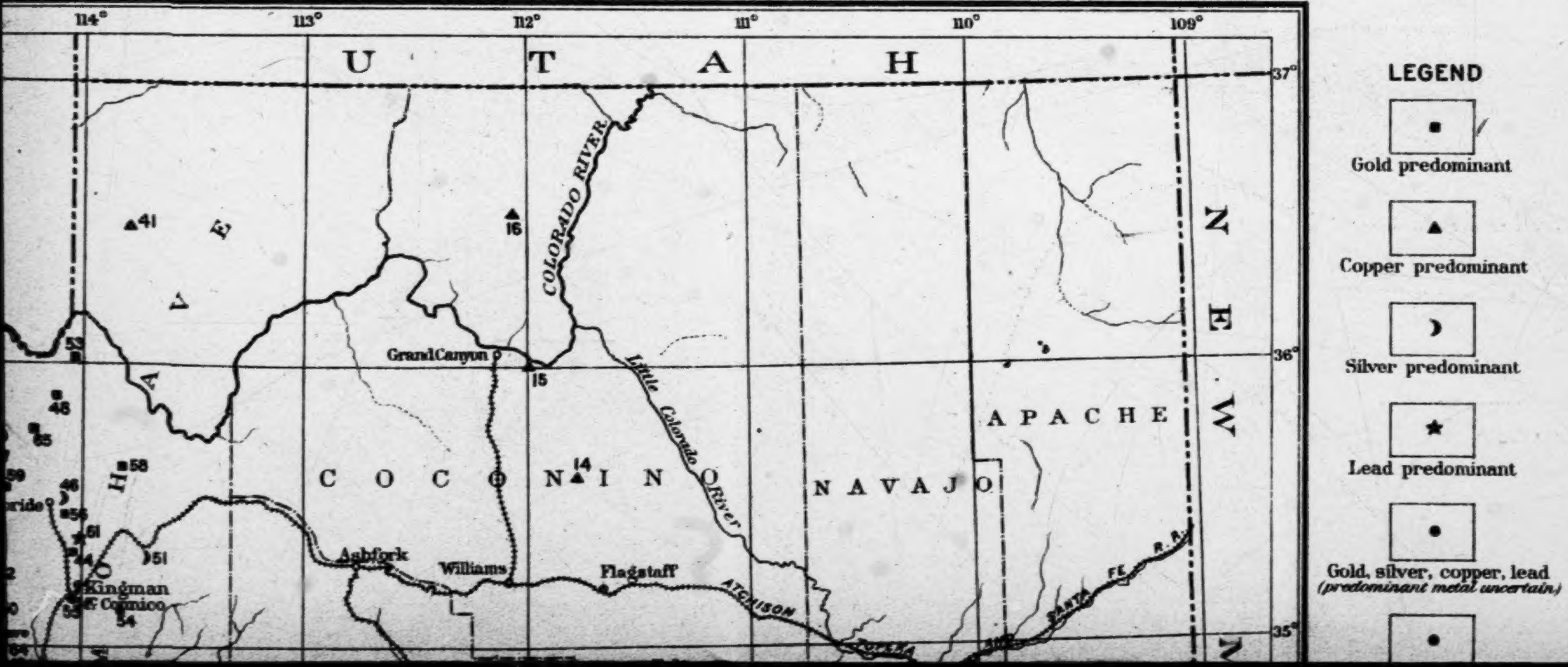
PIMA COUNTY

66. Ajo
67. Amole
68. Arivaca
69. Baboquivari
70. Cababi (Comobabi)
71. Empire
72. Greaterville
73. Gunsight
74. Helvetia
75. Montezuma (Sonoita Mountains)
76. Old Baldy
77. Pima (Olive, Twin Buttes)
78. Quijotoa
79. Rincon
80. Santa Rosa Mountains
81. Silver Bell
82. Silver Hill

PINAL COUNTY

83. Bunker Hill (Copper Creek)
84. Gold Mountains (Galiuro)
85. Mammoth
86. Mineral Creek (Ray, Kelvin)
87. Mineral Hill (location uncertain)
88. Old Hat (Oracle)
89. Pioneer




114°
113°
112°
111°
110°
109°
37°
36°
35°
U T A H
COLORADO RIVER
Little Colorado River
Grand Canyon
C O C O N I N O
N A V A J O
A P A C H E
N E W
Ashfork
Williams
Flagstaff
ATCHISON
TOPEKA
SANTA FE R.R.
Kingman
41
16
15
14
53
48
65
58
46
56
61
44
51
55
54
LEGEND
Gold predominant
Copper predominant
Silver predominant
Lead predominant
Gold, silver, copper, lead
(predominant metal uncertain)

Mountain, San Carlos)
20. Dripping Springs
21. Ellison
22. Globe
23. Green Valley (Payson)
24. Lost Gulch
25. Miami
26. Pinto Creek

GRAHAM AND GREENLEE COUNTIES

27. Aravaipa
28. Ash Peak
29. Bunker Hill (Copper Creek)
30. Clark
31. Copper Mountain (Morenci)
32. Greenlee (Metcalf)
33. Lone Star
34. Stanley

MARICOPA COUNTY

35. Agua Fria
36. Cave Creek
37. San Domingo (location uncertain)
38. Vulture
39. Wickenburg

MOHAVE COUNTY

40. (Omitted)
41. Bentley
42. Boundary Cone
43. Cedar Valley (Owens)
44. Cerbat (Hualpai)
45. Chemehuevis
46. Chloride (Hualpai)
47. Eldorado Pass
48. Gold Basin
49. Gold Bug
50. Gold Road (San Francisco)
51. Hackberry
52. Hualpai
53. Lost Basin
54. Maynard
55. McConnico
56. Mineral Park (Hualpai)
57. Mocking Bird (Weaver)
58. Music Mountains
59. Pilgrim
60. Signal (Greenwood)
61. Stockton Hill (Hualpai)
62. Union Pass (San Francisco)
63. Virginia (Weaver)
64. Vivian (San Francisco)
65. White Hills (Indian Secret)

87. Mineral Hill (location uncertain)
88. Old Hat (Oracle)
89. Pioneer
90. Riverside
91. Silver King
92. Vekol (Casa Grande)

SANTA CRUZ COUNTY

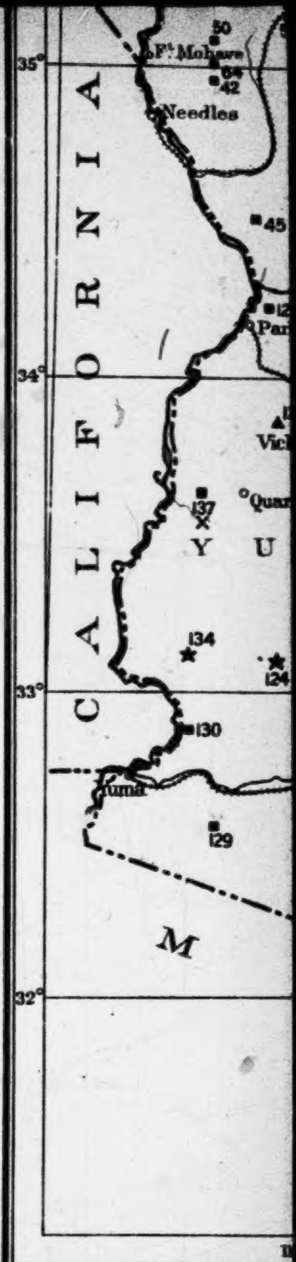
93. Harshaw
94. Mowry
95. Nogales
96. Oro Blanco
97. Palmetto
98. Patagonia
99. Red Rock
100. San Cayetano
101. Tyndall (Aztec)
102. Washington (Duquesne)
103. Wrightson

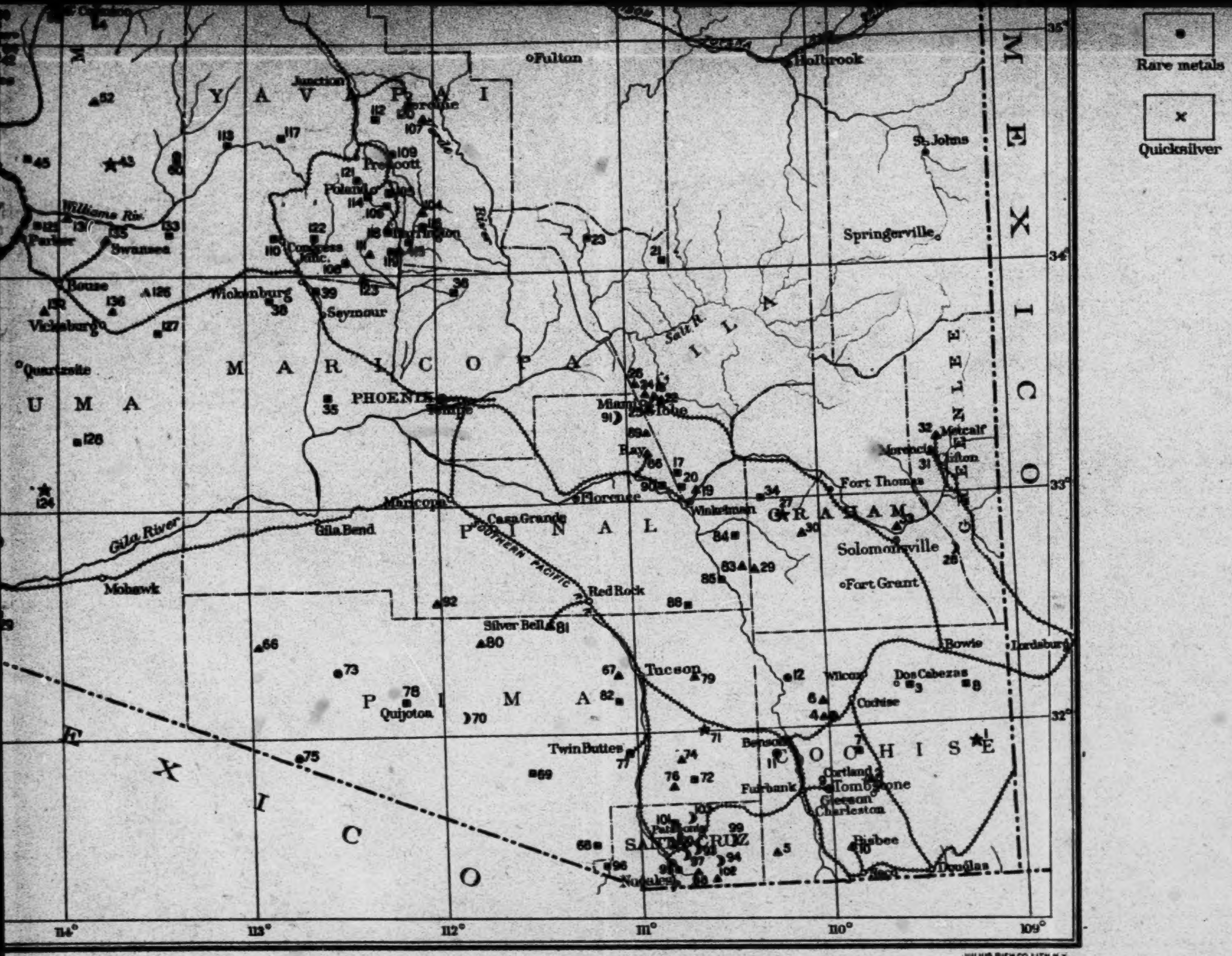
YAVAPAI COUNTY

104. Agua Fria
105. Big Bug
106. Black Canyon
107. Black Hills
108. Black Rock
109. Cherry Creek
110. Congress
111. Copper Basin
112. Del Rio
113. Eureka
114. Hassayampa
115. Peck
116. Squaw Creek
117. Thumb Butte
118. Tiger (Harrington)
119. Tip Top (Bradshaw Mts.)
120. Verde
121. Walker
122. Weaver (Rich Hill)
123. White-Picacho

YUMA COUNTY

124. Castle Dome
125. Cienega
126. Harcuvar
127. Harquahala
128. Kofa (Humbug, Polaris)
129. La Fortuna
130. Laguna
131. Planet
132. Plomosa
133. Santa Maria (Bighorn)
134. Silver
135. Swansea
136. Vicksburg
137. Weaver (La Paz)




Rare metals
Quicksilver
Y A V A P A I
M A R I C O P A
U M A
G I L A
P I N A L
G R A H A M
P I M A
C O C H I S E
SANTA CRUZ
M E X I C O
M E X I C O
Fulton
Holbrook
St. Johns
Springerville
Junction
Jerome
Prescott
Poland
Congress Junc.
Humboldt
Parker
Swansea
Williams Riv.
Bouse
Vicksburg
Quartzsite
Wickenburg
Seymour
PHOENIX
Tempe
Miami
Globe
Ray
Florence
Winkelman
Fort Thomas
Metcalf
Morenci
Clifton
Solomonsville
Fort Grant
Maricopa
Casa Grande
Gila Bend
Gila River
Salt R.
Mohawk
Red Rock
SOUTHERN PACIFIC
Silver Bell
Tucson
Quijotoa
Twin Buttes
Willcox
Cochise
Dos Cabezas
Bowie
Lordsburg
Benson
Fairbank
Cortland
Tombstone
Gleeson
Charleston
Bisbee
Douglas
Nogales
Patagonia
35°
34°
33°
32°
114°
113°
112°
111°
110°
109°

JULIUS BIEN CO. LITH. N.Y.

MAP OF ARIZONA, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

COCHISE COUNTY—Continued.

4. **Dragoon.** Cu, Au, Ag, W.
   Station S. P. R. R.
   Paleozoic limestone cut by granite.
   Contact metamorphic, veins.
   Min. Res. 1899, p. 300.
   1900, p. 257.
   1904, pp. 329–330.
   1905, pp. 145, 412.
   1906, p. 525.
   1908, pt. 1, p. 725.
   1909, pt. 1, p. 577.
5. **Huachuca (Hartford).** Cu, Ag, Au.
   12 miles W. Hereford, E. P. & S. W. R. R.
   Min. Res. 1907, pt. 1, p. 161.
   1908, pt. 1, p. 297.
   1909, pt. 1, p. 242.
6. **Johnson (Cochise).** Cu, Au, Ag, Pb.
   9 miles W. Cochise, S. P. R. R., stage.
   Paleozoic sediments cut by granite porphyry.
   Replacements, contact metamorphic.
   Min. Res. 1905, p. 145.
   1906, pp. 154–155.
   1907, pt. 1, p. 160.
   1908, pt. 1, p. 297.
   1909, pt. 1, p. 242.
7. **Pearce.** Au, Ag.
   Station A. E. R. R.
   Rhyolite.
   Veins.
8. **Teviston (?).** Au, Ag, Pb.
   16 miles SE. Bowie, 10 miles WSW. San Simon, S. P. R. R.
   Min. Res. 1905, p. 145.
   1908, pt. 1, p. 298.
   1909, pt. 1, p. 242.
9. **Tombstone.** Au, Ag, Pb, Zn, Cu.
   Station E. P. & S. W. R. R.
   Paleozoic and Mesozoic sediments cut by porphyry.
   Veins, replacements.
   Harder, E. C., Manganese deposits of the United States: Bull. 380, 1908, p. 274; Bull. 427, 1910, pp. 151–152.
   Min. Res. 1883–84, p. 425.
   1885, p. 258.
   1905, pp. 145–146.
   1906, pp. 155–156.
   1907, pt. 1, p. 161.
   1908, pt. 1, p. 298.
   1909, pt. 1, pp. 242–243.
   Top. sheet Tombstone special.
10. **Warren (Bisbee).** Cu, Au, Ag.
   Station E. P. & S. W. R. R.
   Paleozoic limestone cut by granite porphyry.
   Replacements, probably of contact-metamorphic origin.

COCHISE COUNTY—Continued.

10. **Warren (Bisbee)**—Continued.
Douglas, J., Cupola smelting of copper in Arizona: Min. Res. 1883–84, pp. 397–410.
Ransome, F. L., Copper deposits of Bisbee, Ariz.: Bull. 213, 1903, pp. 149–157.
——— The geology and ore deposits of the Bisbee quadrangle, Arizona: P. P. 21, 1904.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 99–100.
Min. Res. 1882, pp. 221–224.
1883–84, pp. 334–336.
1885, p. 215.
1886, p. 116.
1887, p. 74.
1888, p. 58.
1904, pp. 234–235, 385–387.
1905, pp. 143–144, 352.
1906, pp. 156–158.
1907, pt. 1, pp. 162–164, 593–594.
1908, pt. 1, pp. 201–202, 298–299.
1909, pt. 1, pp. 166, 243–244.
Folio 112, 1904.

11. **Whetstone (Benson).** W.
12 miles SSW. Benson, S. P. R. R.
Granite.
Veins.
Hess, F. L., Wolframite in the Whetstone Mountains, Arizona: Bull. 380, 1909, pp. 164–165.
Min. Res. 1906, p. 525.
1908, pt. 1, p. 725.

12. **Winchester.**
20 miles N. Benson, S. P. R. R.
Min. Res. 1909, pt. 1, p. 245.

13. **Yellowstone** (?). Au, Ag, Cu, Pb.
Location not known.
Min. Res. 1907, pt. 1, p. 164.

COCONINO COUNTY.

14. **Francis.** Cu, Ag, Au.
Williams, A. T. & S. F. R. R.
Min. Res. 1906, p. 158.
1907, pt. 1, p. 164.
1909, pt. 1, p. 245.
Top. sheet San Francisco Mountains.

15. **Grand Canyon.** Cu, Au.
12 miles E. Grand Canyon, A. T. & S. F. R. R.
Carboniferous sediments.
Replacement shear zones.
Emmons, S. F., The copper in the red beds of the Colorado Plateau region: Bull. 260, 1905, pp. 221–232.
Min. Res. 1906, p. 158.
1907, pt. 1, p. 164.
1908, pt. 1, p. 299.
Top. sheet San Francisco Mountains.

COCONINO COUNTY—Continued.

16. **Jacobs Lake (Kaibab Plateau).** Cu.
180 miles S. Marysville, Utah, R. G. W. R. R.
Paleozoic sediments.
Veins, disseminations.
Emmons, S. F., The copper in the red beds of the Colorado Plateau region Bull. 260, 1905, p. 229.
Weed, W. H., The copper deposits of the United States in 1905: Bull. 285, 1906, p. 103.
Top. sheet Kaibab.

GILA COUNTY.

17. **Banner (Troy).** Au, Ag, Cu.
8 miles NE. Kelvin, A. E. R. R.
Paleozoic sediments cut by diabase, quartz monzonite, and porphyry.
Replacements.
Top. sheet Ray.

18. **Black Warrior.** Cu, Ag.
Station A. E. R. R.
Pre-Cambrian schist, dacite, and dacite tuff.
Disseminated.
Min. Res. 1905, p. 147.
Top. sheet Globe.
Folio 111.

19. **Christmas (Saddle Mountain, San Carlos).** Cu, Au, Ag.
9 miles N. Winkelman, A. E. R. R.
Altered Paleozoic sediments cut by porphyry.
Contact metamorphic.
Min. Res. 1905, pp. 154–155.
1906, pp. 160, 169–170.
1907, pt. 1, pp. 167, 177, 598.
1908, pt. 1, p. 300.
1909, pt. 1, p. 246.

20. **Dripping Springs.** Au.
15 miles E. Kelvin, A. E. R. R.
Paleozoic sediments cut by diabase and monzonite porphyry.
Veins.
Top. sheet Ray.

21. **Ellison.** Au, Ag.
112 miles SE. Jerome, U. V. & P. R. R.
Top. sheet Holbrook.

22. **Globe.** Cu, (Au, Ag).
Station A. E. R. R.
Pre-Cambrian schist; Paleozoic sediments cut by granite, quartz monzonite, and diabase.
Replacements, veins, and disseminations.
Douglas, J., Cupola smelting of copper in Arizona: Min. Res. 1883–84, pp. 397–410.
Ransome, F. L., The Globe copper district, Arizona: P. P. 12, 1904.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 100–101.
Min. Res. 1882, pp. 221–224.
1883–84, pp. 334–338.
1885, p. 215.

GILA COUNTY—Continued.

22. **Globe**—Continued.
Min. Res. 1887, p. 74.
1888, p. 58.
1904, pp. 236–237.
1905, pp. 146–147, 353.
1906, pp. 159–160, 390–391.
1907, pt. 1, pp. 165–167, 595–597.
1908, pt. 1, pp. 204, 300.
1909, pt. 1, pp. 166, 245–246.
Top. sheet Globe.
Folio 111, 1905.

23. **Green Valley (Payson).** Au, Ag.
104 miles SE. Jerome, U. V. & P. R. R.
Min. Res. 1909, pt. 1, p. 246.
Top. sheet Verde.

24. **Lost Gulch.** Cu, Pb, Au, Ag.
8 miles NW. Black Warrior, A. E. R. R.
Paleozoic limestone cut by quartz monzonite and diabase.
Replacements.
Min. Res. 1907, pt. 1, p. 167.
1908, pt. 1, p. 300.
1909, pt. 1, p. 246.

25. **Miami.** Cu, Ag.
Station A. E. R. R.
Pre-Cambrian schist; Paleozoic sediments cut by granite and granite porphyry.
Disseminated.
Douglas, J., Cupola smelting of copper in Arizona: Min. Res. 1883–84, pp. 397–410.
Ransome, F. L., The Globe copper district, Arizona: P. P. 12, 1904.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 100–101.
Min. Res. 1882, pp. 221–224.
1883–84, pp. 334–338.
1885, p. 215.
1887, p. 74.
1888, p. 58.
1904, pp. 236–237.
1905, pp. 146–147, 353.
1906, pp. 159–160, 370–371.
1907, pt. 1, pp. 165–167, 595–597.
1908, pt. 1, pp. 204, 300.
Top. sheet Globe.
Folio 111, 1904.

26. **Pinto Creek.** Cu, Ag, Au.
10 miles NW. Black Warrior, A. E. R. R.
Pre-Cambrian schists cut by granite and granite porphyry.
Disseminations.
Min. Res. 1908, pt. 1, p. 300.

GRAHAM AND GREENLEE COUNTIES.

27. **Aravaipa.** Pb, Cu, Ag, Au.
 75 miles NW. Willcox, S. P. R. R.; 30 miles SSE. San Carlos, A. E. R. R.
 Min. Res. 1909, pt. 1, p. 247.
28. **Ash Peak.** Ag, Au.
 12 miles W. Seldon, A. & N. M. R. R.
 Min. Res. 1906, p. 161.
 1907, pt. 1, p. 168.
 1908, pt. 1, p. 301.
 1909, pt. 1, p. 247.
29. **Bunker Hill (Copper Creek).** Cu, Au, Ag, Pb, Fe.
 36 miles SE. Winkelman, A. E. R. R.
 Limestone, diorite, rhyolite.
 Disseminated, contact metamorphic.
 Min. Res. 1905, p. 148.
 1907, pt. 1, p. 168.
30. **Clark.** Cu, Au, Ag, Pb.
 35 miles W. Safford, A. E. R. R.
 Min. Res. 1906, p. 161.
 1909, pt. 1, p. 247.
31. **Copper Mountain (Morenci).** Cu, Au, Ag.
 Station A. & N. M. R. R.
 Paleozoic sediments cut by acidic porphyry.
 Contact metamorphic, veins, disseminated.
 Douglas, J., Cupola smelting of copper in Arizona: Min. Res. 1883-84, pp. 397-410.
 Lindgren, W., Copper deposits at Clifton, Ariz.: Bull. 213, 1903, pp. 133-140.
 ——— The copper deposits of the Clifton-Morenci district, Arizona: P. P. 43, 1905.
 Lindgren, W., and Hillebrand, W. F., Minerals from Clifton-Morenci, Ariz.: Bull. 262, 1905, pp. 42-54.
 Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 101-102.
 Min. Res. 1882, pp. 221-224.
 1885, p. 215.
 1886, p. 116.
 1887, p. 75.
 1888, p. 58.
 1904, pp. 235-236.
 1905, pp. 148-149, 353.
 1906, pp. 161-162, 387-389.
 1907, pt. 1, pp. 168-170, 594-595.
 1908, pt. 1, pp. 203-204, 301.
 1909, pt. 1, pp. 166, 247.
 Top. sheet Clifton.
 Folio 129, 1905.
32. **Greenlee (Metcalf).** Cu, Au, Ag.
 Station A. & N. M. R. R.
 Paleozoic sediments cut by acidic porphyries.
 Contact metamorphic, veins, and disseminated.
 Douglas, J., Cupola smelting of copper in Arizona: Min. Res. 1883-84, pp. 397-410.
 Lindgren, W., Copper deposits at Clifton, Ariz.: Bull. 213, 1903, pp. 133-140.

GRAHAM AND GREENLEE COUNTIES—Continued.

32. **Greenlee (Metcalf)**—Continued.

Lindgren, W., The copper deposits of the Clifton-Morenci district, Arizona: P. P. 43, 1905.

Lindgren, W., and Hillebrand, W. F., Minerals from the Clifton-Morenci district, Arizona: Bull. 262, 1905, pp. 42–54.

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Min. Res. 1882, pp. 221–410.
1885, p. 215.
1886, p. 116.
1887, p. 75.
1888, p. 58.
1904, pp. 235–236.
1905, pp. 148–149, 353.
1906, pp. 161–162, 387–389.
1907, pt. 1, pp. 168–170, 594–595.
1908, pt. 1, pp. 203–204, 301.
1909, pt. 1, pp. 166, 247.

Top. sheet Clifton.
Folio 129, 1905.

33. **Lone Star.** Cu, Au, Ag.
7 miles N. Solomonsville, A. E. R. R.
Min. Res. 1906, p. 162.
1907, pt. 1, p. 170.
1908, pt. 1, p. 301.
1909, pt. 1, p. 248.

34. **Stanley.** Au, Ag, Pb.
18 miles SSE. San Carlos, A. E. R. R.
Min. Res. 1905, p. 149.
1906, p. 162.

MARICOPA COUNTY.

35. **Agua Fria.** Au.
25 miles W. Phoenix, S. F. P. & P. R. R., A. E. R. R.
Veins (?).
Min. Res. 1905, p. 149.
1906, p. 162.
1907, pt. 1, p. 171.
1908, pt. 1, p. 302.

36. **Cave Creek.** Au, Cu, Ag.
30 miles NNE. Phoenix, S. F. P. & P. R. R., A. E. R. R.
Pre-Cambrian granite and schists cut by basic dikes.
Veins.
Min. Res. 1904, p. 149.
1908, pt. 1, p. 302.
1909, pt. 1, p. 248.

37. **San Domingo.** Cu, Au, Ag.
Hot Springs Junction, S. F. P. & P. R. R.
Min. Res. 1908, pt. 1, p. 302.
1909, pt. 1, p. 248.

MARICOPA COUNTY—Continued.

38. **Vulture.** Au (Cu, Ag).
    20 miles SW. Wickenburg, S. F. P. & P. R. R.
    Pre-Cambrian schist cut by diabase.
    Veins.
    Min. Res. 1905, p. 150.
    1908, pt. 1, p. 302.
    1909, pt. 1, p. 248.
39. **Wickenburg.** Au, Ag.
    Station S. F. P. & P. R. R.

MOHAVE COUNTY.

40. Omitted.
41. **Bentley.** Cu, Ag (Au).
    65 miles ESE. Moapa, Nev., S. P. L. A. & S. L. R. R.
    Sediments.
    Replacements.
    Min. Res. 1905, p. 150.
    1906, p. 163.
    1907, pt. 1, p. 172.
    1908, pt. 1, p. 303.
    1909, pt. 1, p. 249.
    Top. sheet Mount Trumbull.
42. **Boundary Cone.** Au, Ag.
    12 miles NE. Needles, Cal., A. T. & S. F. R. R.
    Tertiary volcanics.
    Veins.
    Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 82; Bull. 397, 1909, pp. 198–203.
    Min. Res. 1905, pp. 151–152.
    Top. sheet Needles special.
43. **Cedar Valley (McCracken).** Pb, Ag, Cu, Au, W.
    35 miles SE. Yucca, A. T. & S. F. R. R.
    Pre-Cambrian gneiss and schist.
    Veins.
    Bancroft, H., Reconnaissance of the ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 12, 44, 123–126.
    Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 397, 1909, p. 141.
    Min. Res. 1905, pp. 150, 412.
    1906, p. 163.
    1907, pt. 1, p. 172.
    1908, pt. 1, p. 725.
44. **Cerbat (Hualpai).** Au, Ag, Pb.
    14 miles NW. Kingman, A. T. & S. F. R. R.
    Pre-Cambrian gneiss and schist cut by granite porphyry.
    Veins.
    Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 67–69; Bull. 397, 1909, pp. 91–107.
    Min. Res. 1905, p. 152.
    1906, pp. 164–165.
    1907, pt. 1, p. 173.
    1908, pt. 1, pp. 303–304.

MOHAVE COUNTY—Continued.

45. **Chemehuevis.** Au, Ag, Pb. (D, Pl.)
 40 miles SSW. Franconia, A. T. & S. F. R. R.
 Top. sheet Parker.

46. **Chloride (Hualpai).** Ag, Pb, Au, Cu.
 Station A. T. & S. F. R. R.
 Pre-Cambrian granite, gneiss, and schist cut by granite porphyry.
 Veins.
 Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 62–65; Bull. 397, 1909, pp. 51–80.
 Min. Res. 1905, p. 752.
 1906, pp. 164–165.
 1907, pt. 1, p. 173.
 1908, pt. 1, pp. 303–304.
 Top. sheet Camp Mohave.

47. **Eldorado Pass.** Au, Ag, Cu.
 50 miles NE. Searchlight, B. & S. R. R.
 Pre-Cambrian granite, gneiss, and schist cut by Tertiary volcanics.
 Veins.
 Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 72; Bull. 397, 1909, p. 218.
 Top. sheet Camp Mohave.

48. **Gold Basin.** Au, Pb, Cu, Mo, W.
 40 miles N. Hackberry, A. T. & S. F. R. R.
 Pre-Cambrian gneiss, schist, and granite.
 Veins.
 Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 69–70; Bull. 397, 1909, pp. 118–127.
 Min. Res. 1905, pp. 150–160.
 1906, p. 163.
 1908, pt. 1, p. 303.
 1909, pt. 1, p. 249.
 Top. sheet Camp Mohave.

49. **Gold Bug.** Au, Ag.
 40 miles NW. Chloride, A. T. & S. F. R. R.
 Tertiary volcanics.
 Veins.
 Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 72–73; Bull. 397, 1909, p. 217.
 Top. sheet Camp Mohave.

50. **Gold Road (San Francisco).** Au.
 16 miles NE. Needles, Cal., 24 miles W. Kingman, A. T. & S. F. R. R.
 Tertiary Volcanics.
 Veins.
 Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 75–78; Bull. 397, 1909, pp. 152–180.
 Min. Res. 1905, pp. 151–152.
 1906, pp. 163–164.
 1907, pt. 1, pp. 172–173.
 1908, pt. 1, p. 303.
 Top. sheet Camp Mohave.

MOHAVE COUNTY—Continued.

51. **Hackberry.** Ag.
Station A. T. & S. F. R. R.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 397, 1909, pp. 47, 141.
Min. Res. 1907, pt. 1, p. 172.
Top. sheet Diamond Creek.

52. **Hualpai.** Cu.
20 miles E. Yucca, A. T. & S. F. R. R.
Pre-Cambrian granite.
Veins.
Min. Res. 1909, pt. 1, p. 249.

53. **Lost Basin.** Au, Ag, Cu.
60 miles N. Chloride, A. T. & S. F. R. R.
Pre-Cambrian granite.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 72; Bull. 397, 1909, pp. 150–151.
Top. sheet St. Thomas.

54. **Maynard.** Au, Cu (Mo, Hg, W).
15 miles SE. Kingman, A. T. & S. F. R. R.
Pre-Cambrian granite cut by porphyry.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 70; Bull. 397, 1909, pp. 139–142.
Min. Res. 1908, pt. 1, pp. 303, 725.
Top. sheet Diamond Creek.

55. **McConnico.** Au.
Station A. T. & S. F. R. R.
Pre-Cambrian granite and pegmatite.
Shear zones.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 70–71.
Top. sheet Camp Mohave.

56. **Mineral Park (Hualpai).** Au, Ag, Pb, Cu.
5 miles SSE. Chloride, A. T. & S. F. R. R.
Pre-Cambrian complex cut by granite porphyry.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 65–66; Bull. 397, 1909, pp. 80–91.
Min. Res. 1905, p. 152.
1906, pp. 164–165.
1907, pt. 1, p. 173.
1908, pt. 1, pp. 303–304.

57. **Mocking Bird (Weaver).** Au.
24 miles NW. Chloride, A. T. & S. F. R. R.
Pre-Cambrian granite, gneiss, schist, cut by Tertiary volcanics.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 73–74. Bull. 397, 1909, pp. 215–217.
Min. Res. 1907, pt. 1, pp. 173–174.
1908, pt. 1, p. 304.
Top. sheet Camp Mohave.

MOHAVE COUNTY—Continued.

58. **Music Mountains.** Au, Cu.
25 miles N. Hackberry, A. T. & S. F. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 71; Bull. 397, 1909, pp. 142–151.
Min. Res. 1905, p. 151.
1908, pt. 1, p. 303.
1909, pt. 1, p. 249.
Top. sheet Diamond Creek.

59. **Pilgrim.** Au.
12 miles W. Chloride, A. T. & S. F. R. R.
Rhyolite and granite porphyry.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 74; Bull. 397, 1909, p. 214.
Top. sheet Camp Mohave.

60. **Signal (Greenwood).** Au, W.
107 miles SSE. Kingman, A. T. & S. F. R. R.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 397, 1909, p. 47.

61. **Stockton Hill (Hualpai).** Pb, Ag, Au, Cu.
10 miles NNW. Kingman, A. T. & S. F. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 397, 1909, pp. 107–118.
Min. Res. 1905, p. 152.
1906, pp. 164–165.
1907, pt. 1, p. 173.
1908, pt. 1, pp. 303–304.
Top. sheet Camp Mohave.

62. **Union Pass (San Francisco).** Au.
30 miles WNW. Kingman, A. T. & S. F. R. R.
Pre-Cambrian complex cut by Tertiary volcanics.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 74–75; Bull. 397, 1909, pp. 203–214.
Min. Res. 1905, p. 151.
1906, pp. 163–164.
1907, pt. 1, pp. 173–174.
1908, pt. 1, p. 303.
1909, pt. 1, p. 249.
Top. sheet Camp Mohave.

63. **Virginia (Weaver).** Au.
25 miles NW. Chloride, A. T. & S. F. R. R.
Tertiary volcanics.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, p. 74; Bull. 397, 1909, p. 214.
Min. Res. 1907, pt. 1, pp.173–174.

MOHAVE COUNTY—Continued.

63. **Virginia (Weaver)**—Continued.
Min. Res. 1908, pt. 1, p. 304.
1909, pt. 1, p. 250.
Top. sheet Camp Mohave.

64. **Vivian (San Francisco).** Au.
14 miles NE. Needles, Cal., A. T. & S. F. R. R.
Tertiary volcanics.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 340, 1908, pp. 78–81; Bull. 397, 1909, pp. 180–198.
Min. Res. 1905, p. 151.
1906, pp. 163–164.
1907, pt. 1, pp. 172–173.
1908, pt. 1, p. 303.
1909, pt. 1, p. 249.

65. **White Hills (Indian Secret).** Au, Ag.
30 miles NNW. Chloride, A. T. & S. F. R. R.
Pre-Cambrian complex.
Veins.
Schrader, F. C., Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Ariz.: Bull. 397, 1909, pp. 127–139.
Min. Res. 1906, p. 163.
Top. sheet Camp Mohave.

PIMA COUNTY.

66. **Ajo.** Cu, Au, Ag (W).
45 miles SSW. Gila Bend, S. P. R. R.
Eruptives (?).
Replacements (?).
Min. Res. 1905, p. 153.
1906, p. 166.
1907, pt. 1, p. 174.
1908, pt. 1, p. 304.
1909, pt. 1, p. 250.

67. **Amole.** Cu, Au, Ag.
10 miles WNW. Tucson, S. P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1905, pp. 152–153.
1906, p. 166.
1907, pt. 1, p. 174.
1908, pt. 1, p. 304.
1909, pt. 1, p. 250.

68. **Arivaca.** Au, Cu, Ag, Pb, W.
25 miles SW. Twin Buttes, 70 miles SSW. Tucson, S. P. R. R.
Granite.
Veins.
Min. Res. 1899 (Twenty-first Ann. Rept., pt. 6), p. 300.
1905, p. 153.
1906, pp. 166, 525.
1907, pt. 1, p. 174.
1908, pt. 1, pp. 305, 725.
1909, pt. 1, p. 251.

PIMA COUNTY—Continued.

69. **Baboquivari.** Au, Ag.
60 miles SW. Tucson, S. P. R. R.
Min. Res. 1906, p. 166.
1908, pt. 1, p. 305.

70. **Cababi (Comobabi).** Ag, Cu.
75 miles WSW. Tucson, S. P. R. R.
Min. Res. 1905, p. 166.
1907, pt. 1, p. 174.

71. **Empire.** Pb, Ag, Cu.
9 miles S. Pantano, S. P. R. R.
Paleozoic sediments cut by acidic intrusives.
Replacements.
Min. Res. 1906, p. 166.
1907, pt. 1, p. 175.
1908, pt. 1, p. 305.
1909, pt. 1, p. 251.
Top. sheet Patagonia.

72. **Greaterville.** Au, Ag. (D, Pl.)
15 miles NW. Sonoita, S. P. R. R.
Granite (pre-Cambrian?), Paleozoic sediments cut by acidic intrusives.
Veins and replacements.
Hill, J. M., Placer deposits of Greaterville, Ariz.: Bull. 430, 1910, pp. 11-22.
Min. Res. 1905, p. 153.
1906, pp. 166-167.
1908, pt. 1, p. 305.
1909, pt. 1, p. 251.
Top. sheet Patagonia.

73. **Gunsight.**
60 miles S. Gila Bend, S. P. R. R.
Contact metamorphic (?).

74. **Helvetia.** Cu, Au, Ag, Pb, Mo.
17 miles S. Vail, S. P. R. R.
Granite (pre-Cambrian?), Paleozoic sediments cut by acidic intrusives.
Veins, replacements, contact metamorphic.
Schrader, F. C., and Hill, J. M., Some occurrences of molybdenite in the Santa Rita and Patagonia mountains, Ariz.: Bull. 430, 1910, pp. 154-158.
Min. Res. 1905, p. 153.
1906, pp. 167-168, 392.
1907, pt. 1, p. 175.
1908, pt. 1, p. 305.
1909, pt. 1, p. 251.
Top. sheet Patagonia.

75. **Montezuma (Sonoita Mountains).**
100 miles S. Gila Bend, S. P. R. R.

76. **Old Baldy.** Cu, Au, Ag, (Fe, Mo).
45 miles SSE. Tucson, S. P. R. R.
Pre-Cambrian granite and schist cut by acidic volcanics, capped by Tertiary volcanics.
Veins.
Schrader, F. C., and Hill, J. M., Some occurrences of molybdenite in the Santa Rita and Patagonia mountains, Ariz.: Bull. 430, 1910, pp. 158-159.
Top. sheet Patagonia.

PIMA COUNTY—Continued.

77. **Pima (Olive, San Xavier, Twin Buttes).** Cu, Ag, Pb, Au.
Station Twin Buttes, S. P. R. R.
Paleozoic sediments cut by granite.
Contact metamorphic.
Min. Res. 1905, p. 153.
1906, pp. 168, 391.
1907, pt. 1, p. p, 175.
1908, pt. 1, p. 305.
1909, pt. 1, p. 251.

78. **Quijotoa.** Au, Cu, Ag, Pb. (D, Pl.)
70 miles SSW. Casa Grande, S. P. R. R.
Min. Res. 1905, p. 153.
1906, p. 167.
1907, pt. 1, 175.
1908, pt. 1, p. 305.
1909, pt. 1, p. 251.

79. **Rincon.** Cu.
18 miles E. Tucson, S. P. R. R.
Min. Res. 1907, pt. 1, p. 175.
Top. sheet Tucson.

80. **Santa Rosa.** Cu, Au, Ag.
15 miles WSW. Silver Bell, A. S. R. R.

81. **Silver Bell.** Cu, Pb, Ag, Au.
Station A. S. R. R.
Paleozoic sediments cut by granite porphyry.
Contact metamorphic, disseminated, veins.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 102–103.
Min. Res. 1905, p. 153.
1906, pp. 167, 391.
1907, pt. 1, pp. 175–176, 598.
1908, pt. 1, pp. 204, 305.
1909, pt. 1, pp. 167, 251.

82. **Silver Hill.** Au, Ag, Cu, Pb.
18 miles SW. Tucson, S. P. R. R.

PINAL COUNTY.

83. **Bunker Hill (Copper Creek).** Cu, Au, Ag, Pb, Fe.
33 miles SSE. Winkelman, A. E. R. R.
Limestone, diorite, rhyolite.
Disseminated, contact metamorphic.
Min. Res. 1908, pt. 1, p. 306.
1909, pt. 1, p. 252.

84. **Gold Mountains (Galiuro).** Au.
10 miles SE. Winkelman, A. E. R. R.
Tertiary volcanics.
Veins (?).

85. **Mammoth.** Au, Mo.
21 miles SSE. Winkelman, A. E. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1904, p. 341.

PINAL COUNTY—Continued.

86. **Mineral Creek (Ray, Kelvin).** Cu.
7 miles N. Kelvin, A. E. R. R.
Pre-Cambrian schist, Paleozoic sediments.
Disseminated.
Min. Res. 1904, p. 342.
1905, p. 154.
1906, p. 169.
1907, pt. 1, pp. 176–177, 599.
1908, pt. 1, pp. 205, 306.
1909, pt. 1, pp. 167, 252.
Top. sheet Ray.

87. **Mineral Hill.** Cu, Ag, Au, Pb.
Location uncertain.
Min. Res. 1908, pt. 1, p. 306.

88. **Old Hat** (**Oracle**). Au, Ag, Pb, W. (D, Pl.)
38 miles N. Tucson, S. P. R. R.
Pre-Cambrian granite.
Veins.
Min. Res. 1905, p. 154.
1906, p. 169.
1907, pt. 1, p. 177.
1908, pt. 1, pp. 306, 725–726.
1909, pt. 1, pp. 253, 577.

89. **Pioneer.** Cu, Pb, Ag, Au, Zn.
10 miles NE. Kelvin, A. E. R. R.
Paleozoic sediments cut by diabase.
Veins.
Min. Res. 1905, p. 154.
1906, p. 169.
1907, pt. 1, p. 177.
1908, pt. 1, p. 306.
1909, pt. 1, p. 253.
Top. sheet Ray.

90. **Riverside.** Au, Ag, Cu, Pb.
5 miles E. Kelvin, A. E. R. R.
Paleozoic sediments cut by diabase and monzonite porphyry.
Veins (?).
Min. Res. 1905, p. 154.
1906, p. 169.
1907, pt. 1, p. 177.
1908, pt. 1, p. 307.
Top. sheet Ray.

91. **Silver King.** Ag, Cu.
39 miles NE. Florence, A. E. R. R.
Pre-Cambrian schist and Paleozoic sediments cut by syenite.
Veins.
Min. Res. 1909, pt. 1, p. 253.
Top. sheet Florence.

92. **Vekol (Casa Grande).** Cu, Au, Ag, Pb.
28 miles S. Casa Grande, S. P. R. R.
Contact metamorphic (?).
Min. Res. 1905, p. 154.

PINAL COUNTY—Continued.

92. **Vekol (Casa Grande)**—Continued.
Min. Res. 1907, pt. 1, p. 176.
1908, pt. 1, p. 306.
1909, pt. 1, p. 252.

SANTA CRUZ COUNTY.

93. **Harshaw.** Ag, Au, Cu, Pb.
12 miles S. Patagonia, S. P. R. R.
Paleozoic sediments and Tertiary volcanics.
Veins, replacements.
Min. Res. 1905, p. 155.
1906, pp. 170–171.
1908, pt. 1, p. 307.
1909, pt. 1, p. 253.
Top. sheet Nogales.

94. **Mowry.** Ag, Pb, Au, Cu.
15 miles S. Patagonia, S. P. R. R.
Granite (pre-Cambrian?), Paleozoic sediments.
Veins.
Min. Res. 1905, pp. 155, 156.
1906, p. 170.
1907, pt. 1, p. 178.
1908, pt. 1, p. 307.
Top. sheet Nogales.

95. **Nogales.** Au, Cu, W.
8 miles N. Nogales, S. P. R. R.
Granite (pre-Cambrian?), cut by acidic and basic dikes.
Veins.
Hill, J. M., Notes on the occurrence of tungsten minerals near Calabasas, Ariz.: Bull. 430, 1910, pp. 164–166.
Min. Res. 1908, pt. 1, p. 725.
1909, pt. 1, p. 253.
Top. sheet Nogales.

96. **Oro Blanco.** Au, Ag, Cu.
30 miles W. Nogales, 77 miles SSW. Tucson, S. P. R. R.
Min. Res. 1905, pp. 155–156.
1907, pt. 1, p. 178.
1908, pt. 1, p. 307.
1909, pt. 1, p. 253.

97. **Palmetto.** Ag, Pb, Cu.
15 miles SW. Patagonia, S. P. R. R.
Granite (pre-Cambrian?), cut by acidic and basic dikes.
Veins and disseminations.
Min. Res. 1907, pt. 1, p. 178.
1908, pt. 1, p. 307.
Top. sheet Nogales.

98. **Patagonia.** Cu, Au, Ag, Pb, Mo.
15 miles E. Nogales, S. P. R. R.
Granite (pre-Cambrian?), cut by acidic and basic dikes.
Veins.
Schrader, F. C., and Hill, J. M., Some occurrences of molybdenite in the Santa Rita and Patagonia mountains, Arizona: Bull. 430, 1910, pp. 159–161.

98. **Patagonia**—Continued.
    Min. Res. 1906, p. 171.
    1908, pt. 1, p. 307.
    1909, pt. 1, p. 253.
    Top. sheet Nogales.
99. **Red Rock.** Ag, Pb, Cu, Au, Fe.
    18 miles E. Patagonia, S. P. R. R.
    Tertiary volcanics.
    Veins.
    Top. sheets Patagonia, Nogales.
100. **San Cayetano.** Ag, Pb, Cu.
    8 miles N. Calabasas, S. P. R. R.
    Granite (pre-Cambrian?), Tertiary volcanics.
    Veins.
    Top. sheet Patagonia.
101. **Tyndall (Aztec).** Au, Ag, Cu, Pb.
    20 miles NNW. Patagonia, S. P. R. R.
    Granite (pre-Cambrian?) cut by diorite, capped by Tertiary volcanics.
    Veins.
    Min. Res. 1906, p. 170.
    1907, pt. 1, p. 178.
    1908, pt. 1, p. 307.
    1909, pt. 1, p. 254.
    Top. sheet Patagonia.
102. **Washington (Duquesne).** Cu, Au, Ag, Pb, Zn.
    20 miles E. Nogales, 21 miles S. Patagonia, S. P. R. R.
    Granite (pre-Cambrian?) Paleozoic sediments cut by acidic dikes.
    Veins, contact metamorphic.
    Schrader, F. C., and Hill, J. M., Some occurrences of molybdenite in the Santa Rita and Patagonia mountains, Arizona: Bull. 430, 1910, pp. 161–162.
    Min. Res. 1903, p. 330.
    1905, p. 156.
    1907, pt. 1, p. 178.
    1908, pt. 1, p. 307.
    Top. sheet Nogales.
103. **Wrightson.** Ag, Au, Pb, Cu.
    14 miles N. Patagonia, S. P. R. R
    Tertiary volcanics.
    Veins.
    Min. Res. 1906, p. 171.
    1907, pt. 1, p. 178.
    1908, pt. 1, pp. 307–308.
    1909, pt. 1, p. 254.
    Top. sheet Patagonia.

YAVAPAI COUNTY.

104. **Agua Fria.** Cu.
    3 miles E. Mayer, S. F. P. & P. R. R.
    Schists.
    Impregnations.

YAVAPAI COUNTY—Continued.

104. **Agua Fria**—Continued.
Min. Res. 1905, p. 158.
1906, p. 172.
1907, pt. 1, p. 180.
1908, pt. 1, p. 309.
1909, pt. 1, p. 255.
Top. sheet Bradshaw Mountains.
Folio 126, 1905.

105. **Big Bug.** Au, Ag, Cu, Pb, Zn. (D, Pl.)
4 miles SE. Mayer, S. F. P. & P. R. R.
Schists.
Veins, disseminations.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 103.
Min. Res. 1905, pp. 158–159.
1906, pp. 172–174.
1907, pt. 1, pp. 180–181.
1908, pt. 1, p. 309.
1909, pt. 1, p. 255.
Top. sheet Bradshaw Mountains.
Folio 126, 1905.

106. **Black Canyon.** Au, Ag.
10 miles SE. Turkey, S. F. P. & P. R. R.
Schists cut by granite.
Veins.
Min. Res. 1905, p. 159.
1906, p. 174.
1907, pt. 1, p. 181.
1908, pt. 1, p. 310.
1909, pt. 1, p. 255.
Top. sheet Bradshaw Mountains.
Folio 126, 1905.

107. **Black Hills.** Cu, Au, Ag.
15 miles S. Jerome, U. V. & P. R. R.
Min. Res. 1905, p. 159.
1906, p. 174.
1907, pt. 1, p. 181.
1908, pt. 1, p. 310.
1909, pt. 1, pp. 255–256.
Top. sheet Jerome.

108. **Black Rock.** Au, Ag, Cu.
14 miles NE. Wickenburg, S. F. P. & P. R. R.
Schists.
Veins.
Min. Res. 1905, p. 159.
1906, p. 174.
1907, pt. 1, pp. 181–182.
1908, pt. 1, p. 310.
1909, pt. 1, p. 256.

109. **Cherry Creek.** Au, Ag.
18 miles E. Dewey, S. F. P. & P. R. R.
Schist and granite, pre-Cambrian.
Veins.

109. **Cherry Creek**—Continued.
    Min. Res. 1907, pt. 1, p. 182.
    1908, pt. 1, p. 310.
    1909, pt. 1, p. 256.

110. **Congress.** Au, Ag.
    Station S. F. P. & P. R. R.
    Granite.
    Veins.
    Min. Res. 1905, p. 159.
    1906, p. 175.
    1907, pt. 1, pp. 183–184.
    1908, pt. 1, p. 311.
    1909, pt. 1, p. 256.
    Top. sheet Congress.

111. **Copper Basin.** Cu, Au, Ag.
    8 miles SW. Harrington, S. F. P. & P. R. R.
    Schist cut by granite and quartz diorite.
    Veins.
    Min. Res. 1888, p. 59.
    1906, p. 174.
    1907, pt. 1, p. 183.
    1908, pt. 1, p. 310.
    1909, pt. 1, p. 256.

112. **Del Rio.** Au. (Pl.)
    10 miles SSE. Junction, S. F. P. & P. R. R.
    Wash gravels.
    Top. sheet Jerome.

113. **Eureka.** Au, Ag, Cu.
    28 miles NW. Hillside, S. F. P. & P. R. R.
    Min. Res. 1906, pp. 174–175.
    1907, pt. 1, p. 183.
    1908, pt. 1, p. 310.
    1909, pt. 1, p. 256.

114. **Hassayampa.** Au, Ag, Cu, Pb.
    Poland station, S. F. P. & P. R. R.
    Schist and amphibolite cut by quartz diorite.
    Veins.
    Min. Res. 1905, p. 159.
    1906, p. 175.
    1907, pt. 1, p. 183.
    1908, pt. 1, pp. 310–311.
    1909, pt. 1, p. 256.
    Top. sheet Bradshaw Mountains.
    Folio 126, 1905.

115. **Peck.** Au, Ag, Cu, Pb.
    8 miles SE. Turkey, S. F. P. & P. R. R.
    Slate and quartzite.
    Vein.
    Min. Res. 1905, pp. 159–160.
    1906, p. 175.
    1907, pt. 1, pp. 184, 185.
    1908, pt. 1, p. 311.
    1909, pt. 1, p. 256.

YAVAPAI COUNTY—Continued.

115. **Peck**—Continued.
Top. sheet Bradshaw Mountains.
Folio 126, 1905.

116. **Squaw Creek.** Au, Ag.
15 miles E. Turkey, S. F. P. & P. R. R.
Schist and granite.
Veins.
Min. Res. 1906, p. 175.

117. **Thumb Butte.** Au, Ag.
18 miles NNW. Hillside, S. F. P. & P. R. R.
Min. Res. 1905, p. 160.
1907, pt. 1, p. 184.
Top. sheet Prescott.

118. **Tiger (Crown King, Harrington).** Au, Ag, Pb, Zn, Cu.
Station S. F. P. & P. R. R.
Schist cut by granite and quartz diorite.
Veins.
Min. Res. 1905, p. 160.
1906, p. 176.
1907, pt. 1, pp. 184–185.
1908, pt. 1, p. 311.
1909, pt. 1, p. 256.
Top. sheet Bradshaw Mountains.
Folio 126, 1905.

119. **Tip Top (Bradshaw Mountains).** Au (W).
8 miles S. Crown King, S. F. P. & P. R. R.
Granite.
Veins.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 103.
Top. sheet Bradshaw Mountains.
Folio 126, 1905.

120. **Verde.** Au, Cu, Ag.
Jerome station, U. V. & P. R. R.
Amphibolite schist.
Replacements.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 103.
Min. Res. 1887, p. 75.
1888, pp. 58–59.
1904, p. 237.
1905, pp. 160,3 53–354.
1906, pp. 176–177, 389–390.
1907, pt. 1, pp. 185, 597–598.
1908, pt. 1, pp. 202–203, 311–312.
1909, pt. 1, pp. 166, 257.
Top. sheet Jerome.

121. **Walker.** Au, Ag, Pb, Cu. (D, Pl.)
8 miles NW. Poland, S. F. P. & P. R. R.
Schist and granite cut by quartz diorite.
Veins.
Min. Res. 1905, p. 160.
1906, p. 176.

YAVAPAI COUNTY—Continued.

121. **Walker**—Continued.
    Min. Res. 1907, pt. 1, p. 185.
    1908, pt. 1, p. 312.
    Top. sheet Bradshaw Mountains.
    Folio 126, 1905.
122. **Weaver (Rich Hill).** Au, Ag, Pb. (D, Pl.)
    10 miles E. Congress, S. F. P. & P. R. R.
    Min. Res. 1905, pp. 160–161.
    1906, p. 176.
    1907, pt. 1, p. 185.
    1908, pt. 1, p. 312.
    1909, pt. 1, p. 257.
    Top. sheet Congress.
123. **White Picacho.** Cu, Au, Ag.
    24 miles NE. Morristown, S. F. P. & P. R. R.
    Min. Res. 1907, pt. 1, pp. 185–186.

YUMA COUNTY.

124. **Castle Dome.** Pb, Ag (Au, Cu).
    25 miles NNE. Yuma, S. P. R. R.
    Pre-Cambrian granite and schist cut by granite and monzonite porphyry, Tertiary volcanics.
    Veins (?).
    Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 32, 45.
    Min. Res. 1905, p. 161.
    1906, p. 177.
    1907, pt. 1, p. 186.
    1908, pt. 1, p. 313.
    1909, pt. 1, p. 258.
125. **Cienega.** Au, Cu, Ag (Pb).
    15 miles NE. Parker, A. T. & S. F. R. R.
    Pre-Cambrian schist capped by Tertiary volcanics.
    Veins.
    Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 68–73.
    Min. Res. 1905, p. 162.
    1908, pt. 1, p. 313.
    1909, pt. 1, p. 258.
    Top. sheet Parker.
126. **Harcuvar.** Cu, Au.
    12 miles N. Wenden, A. T. & S. F. R. R.
    Pre-Cambrian schist cut by granite.
    Veins, contact metamorphic.
    Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 95–103.
    Min. Res. 1888, p. 59.
    1909, pt. 1, p. 258.
127. **Harquahala.** Au.
    9 miles S. Salome, A. T. & S. F. R. R.
    Pre-Cambrian complex cut by basic dikes.

YUMA COUNTY—Continued.

127. **Harquahala**—Continued.
  Veins.
  Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 104–105.
  Min. Res. 1905, p. 161.
    1906, p. 177.
    1907, pt. 1, pp. 186–187.
    1908, pt. 1, p. 313.
128. **Kofa (Humbug, Polaris).** Au, Ag.
  45 miles NNW. Mohawk, S. P. R. R.
  Pre-Cambrian complex and Tertiary volcanics.
  Veins.
  Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, p. 45.
  Min. Res. 1905, pp. 161–162.
    1906, p. 177.
    1907, pt. 1, p. 187.
    1908, pt. 1, p. 313.
    1909, pt. 1, p. 256.
129. **La Fortuna.** Au.
  36 miles SE. Yuma, S. P. R. R.
  Pre-Cambrian schists.
  Veins.
130. **Laguna.** Au. (Pl.)
  14 miles NE. Yuma, S. P. R. R.
  Wash gravels.
131. **Planet.** Cu, Fe.
  28 miles NNW. Bouse, A. & S. R. R.
  Pre-Cambrian schists and sediments.
  Replacements.
  Douglas, J., Cupola smelting of copper in Arizona: Min. Res. 1883–84, pp. 397–410.
  Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 47–55.
  Min. Res. 1909, pt. 1, pp. 167, 258.
132. **Plomosa.** Cu, Ag, Au. (D, Pl.)
  18 miles WSW. Vicksburg, A. T. & S. F. R. R.
  Pre-Cambrian schists capped by Tertiary volcanics.
  Veins.
  Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 21–22, 33, 87–95.
  Min. Res. 1905, pp. 162, 398.
    1906, pp. 177, 495.
    1907, pt. 1, p. 187.
    1908, pt. 1, pp. 313, 692.
    1909, pt. 1, p. 258.
133. **Santa Maria (Bighorn).** Au, Ag, Cu.
  30 miles NNE. Wenden, A. T. & S. F. R. R.
  Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 122–123.
134. **Silver.** Pb, Ag.
  30 miles NNE. Yuma, S. P. R. R.

YUMA COUNTY—Continued.

135. **Swansea.** Cu, Au, Ag.
Station, A. & S. R. R.
Pre-Cambrian schists and sediments.
Replacements.
Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, p. 59.

136. **Vicksburg.** Cu, Au.
Station, A. T. & S. F. R. R.
Pre-Cambrian schists cut by granite.
Contact metamorphic, veins.
Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 95–104.

137. **Weaver (La Paz).** Hg, Cu, Au.
55 miles WSW. Vicksburg, A. T. & S. F. R. R.
Pre-Cambrian schists capped by Tertiary volcanics.
Veins.
Bancroft, H., Ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911.
——— Notes on the occurrence of cinnabar in west-central Arizona: Bull. 430, 1910, pp. 151–153.
Min. Res. 1908, pt. 1, p. 692.

CALIFORNIA, NORTHERN COUNTIES.

The State of California maintains a Bureau of Mines, from which a large number of reports dealing with the mining industry of the State have come. These reports contain much information relative to the mining districts which has not been listed in this bibliography.

In the 31 northern counties of California there are 222 areas called mining districts by the United States Geological Survey. In 178 of these districts gold is the principal metal produced; in 16 districts quicksilver, in 14 iron or chromium, in 13 copper, and in 1 silver.

Distribution of the predominant metals produced in the mining districts of the northern counties of California.

County.	Gold.	Silver.	Copper.	Quicksilver.	Iron.	Total.
Alameda			1		1	2
Alpine		1				1
Amador	8					8
Butte	8					8
Calaveras	9		2		1	12
Colusa				1		1
Contra Costa				1		1
Del Norte	2				2	4
Eldorado	16				2	18
Humboldt	7					7
Lake				3		3
Lassen	1					1
Mariposa	7		1			8
Modoc	1					1
Napa				4		4
Nevada	11		1			12
Placer	12				1	13
Plumas	10		2			12
Sacramento	1					1
Santa Clara				1	1	2
Shasta	11		5		2	18
Sierra	14					14
Siskiyou	23			1	1	25
Solano				1		1
Sonoma				2	2	4
Stanislaus	1					1
Tehama			1		1	2
Trinity	23			1		24
Tuolumne	6					6
Yolo				1		1
Yuba	7					7
	178	1	13	16	14	222

MINING DISTRICTS IN NORTHERN COUNTIES OF CALIFORNIA.

[See Pl. IV. Additional references may be found in Mineral Resources for 1910 and 1911.]

ALAMEDA COUNTY.

1. **Alma.** Cu.
   10 miles W. Oakland, S. P. R. R., A. T. & S. F. R. R.
   Serpentine.
   Lenses.
   Top. sheet Concord.
2. **Livermore (Tesla).** Mn, Cr.
   15 miles SE. Livermore, S. P. R. R.
   Serpentine and chert.
   Lenses.
   Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 271; Bull. 427, 1910, pp. 159-163.

ALAMEDA COUNTY—Continued.

2. **Livermore (Tesla)**—Continued.
Harder, E. C., Chromite deposits in California: Bull. 430, 1910, pp. 173-174.
Min. Res. 1885, pp. 349-350, 357.
1907, pt. 1, p. 101.
1908, pt. 1, p. 767.
Top. sheet Tesla.

ALPINE COUNTY.

3. **Silver Mountain (Leviathan).** Ag, Au.
25 miles SSW. Minden, Nev., V. & T. R. R.
Tertiary volcanics.
Veins.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 191.
Min. Res. 1907, pt. 1, p. 233.
Top. sheet Markleeville.

AMADOR COUNTY.

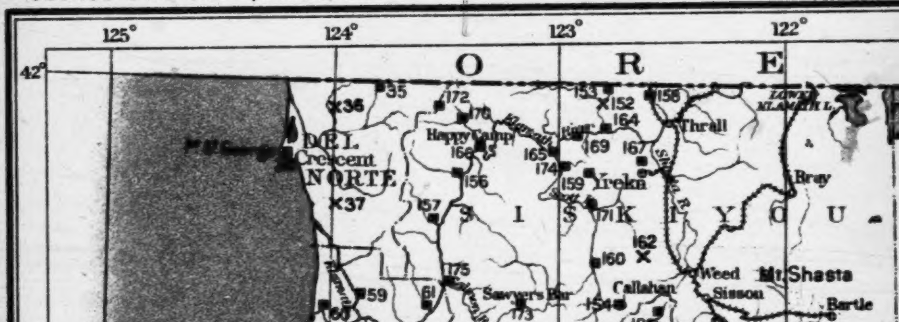
4. **Jackson.** Au.
Station Am. C. R. R.
Slates and greenstones.
Veins.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
1908, pt. 1, p. 327.
1909, pt. 1, pp. 270-271.
Top. sheet Jackson.
Folio 11, 1894.

5. **Lancha Plana.** Au. (Pl.)
8 miles NE. Wallace, S. P. R. R.
Bench gravels.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
1908, pt. 1, p. 328.
Top. sheet Jackson.
Folio 11, 1894.

6. **Middle Bar.** Au. (Pl.)
10 miles SW. Jackson, Am. C. R. R.
Terrace gravels.
Top. sheet Jackson.
Folio 11, 1894.

7. **Oleta.** Au. (Pl.)
21 miles NE. May, S. P. R. R.
Quaternary and Tertiary gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 199.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
1908, pt. 1, p. 328.
1909, pt. 1, pp. 270-271.
Top. sheet Placerville.
Folio 3, 1894.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR



125°
124°
123°
122°
42°
41°
O R E
DEL NORTE
Crescent
S I S K I Y O U
Happy Camp
Yreka
Thrall
Bray
Weed
Sisson
Mt. Shasta
Bartle
Callahan
Sawyers Bar
Denny
Trinity Center
Korbel
Eureka
Weaverville
Keswick
Redding
Winthrop
Hayfork
Guilderback
Elinor
Manton
T R I N I T Y
S T A
Klamath R.
Trinity R.
Shasta R.
McCloud R.
LOWER KLAMATH L.

BULLETIN 507 PLATE IV

2°
121°
120°
119°
42°
41°
G
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V
M O D O C
L A S S E N
S T A
U
Shasta
Bray
Bartle
Clear L.
Fort Bidwell
75
Alturas
Adin
Lower L.
Pit River
Pittville
66
Haydenhill
Horse L.
Eagle L.
Lassen Peak
Susanville
Susan R.
Manton

1. A
2. L
3. S
4. J
5. L
6. M
7. O
8. P
9. P
10. S
11. W
12. B
13. C
14. F
15. I
16. M
17. N
18. O
19. Y
20. A
21. C
22. C
23. E

LIST OF MINING DISTRICTS

AMEDA COUNTY

a
ermore (Tesla)

LPINE COUNTY

er Mountain
Leviathan)

IADOR COUNTY

kson
cha Plana
ldle Bar
ta
e Grove
mouth (Drytown)
ter Creek (Amador)
cano

UTTE COUNTY

gor
erokee
bestown
kip
galia
nshew
ville
kee Hill

AVERAS COUNTY

gels
mpo Seco (Valley
Springs)
peropolis
neralda (Murphy,
Sperry)

73. Mt. Bullion (Whitlock, Mariposa)
74. Quartz Mountain

MODOC COUNTY

75. Hoag

NAPA COUNTY

76. Bella Union
77. Knoxville
78. La Joya (Oat Hill)
79. Mayacmas (Napa Consolidated)

NEVADA COUNTY

80. French Corral
81. Graniteville
82. Lowell Hill
83. Meadow Lake
84. Nevada City (Grass Valley)
85. North Bloomfield (Relief)
86. North Columbia (Grizzly Hill)
87. North San Juan (Badger Hill)
88. Rough and Ready
89. Spenceville
90. Washington (Omega)
91. You Bet (Little York)

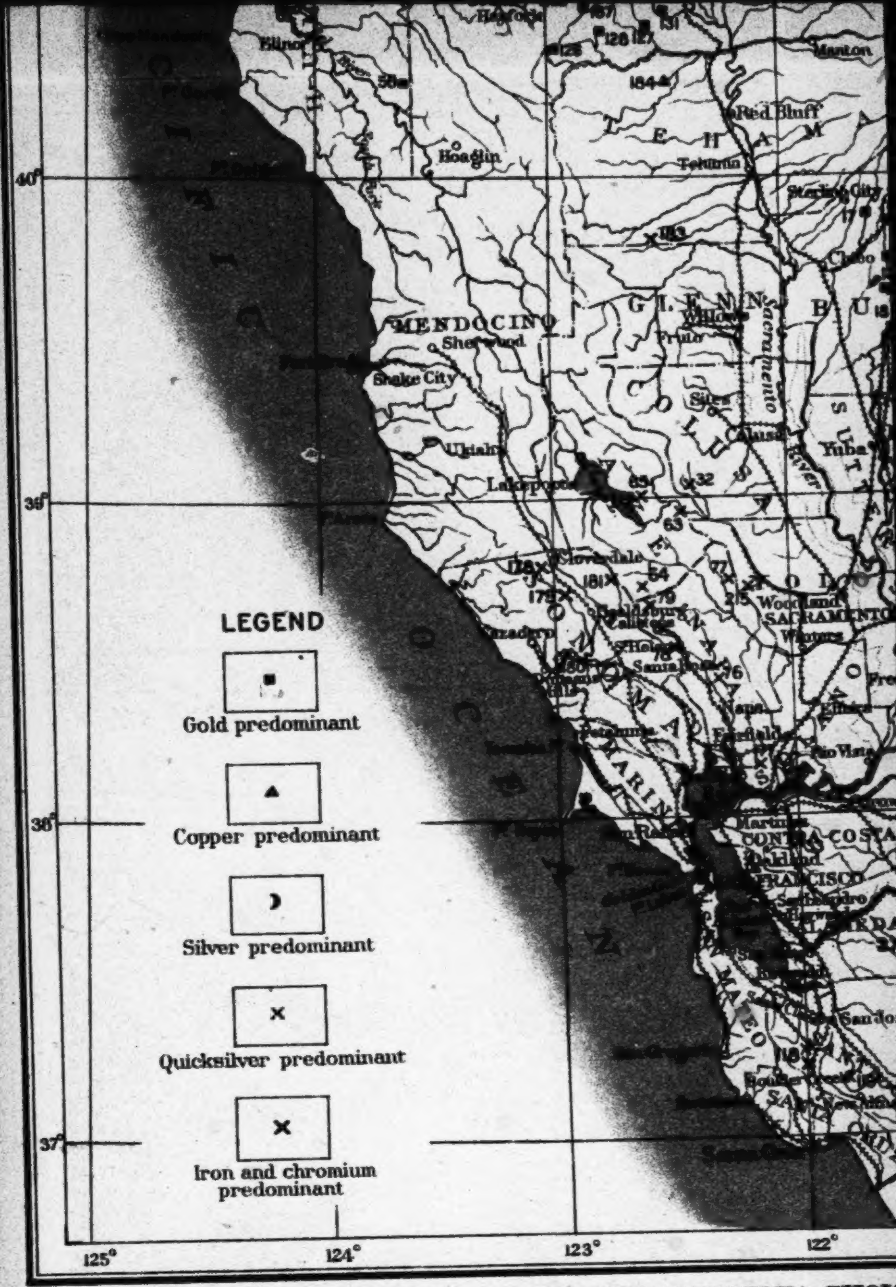
PLACER COUNTY

92. Blue Canyon
93. Canada Hill
94. Dairy Farm (Trent)

146. Indian Hill
147. Pike
148. Poker Flat (Table Rock)
149. Port Wine (Queen City, St. Louis)
150. Poverty Hill (Scales, Mount Pleasant)
151. Sierra City (Sierra Butte)

SISKIYOU COUNTY

152. Beaver Creek
153. Blue Ledge
154. Callahans
155. Cecilville
156. Clear Creek
157. Cottage Grove
158. Cottonwood Creek (Henley, Hornbrook)
159. Deadwood
160. Etna
161. Forks of Salmon
162. Gazelle
163. Gilta
164. Gottville
165. Hamburg
166. Happy Camp (Nolton)
167. Hawkinsville (Yreka)
168. Knownothing
169. Oak Bar
170. O'Mears
171. Oro Fino (Walker)
172. Preston Peak
173. Sawyers Bar (Rollins)
Scotts Bar


LEGEND
■
Gold predominant
▲
Copper predominant
☽
Silver predominant
×
Quicksilver predominant
✕
Iron and chromium predominant
MENDOCINO
Sherwood
Snake City
Ukiah
Lakeport
Hoaglin
Elinor
Red Bluff
Tehama
Manton
Sterling City
Chico
Willows
Fruto
Sites
Colusa
Yuba
Sacramento River
Cloverdale
Healdsburg
Calistoga
St Helena
Santa Rosa
Napa
Woodland
SACRAMENTO
Winters
Petaluma
Fairfield
Rio Vista
MARIN
San Rafael
Martinez
CONTRA COSTA
Oakland
FRANCISCO
San Leandro
Boulder Creek
40°
39°
38°
37°
125°
124°
123°
122°

MAP OF NORTHERN COUNTIES OF CALIFORNIA, SHOV

Scale $\frac{1}{2,500,000}$

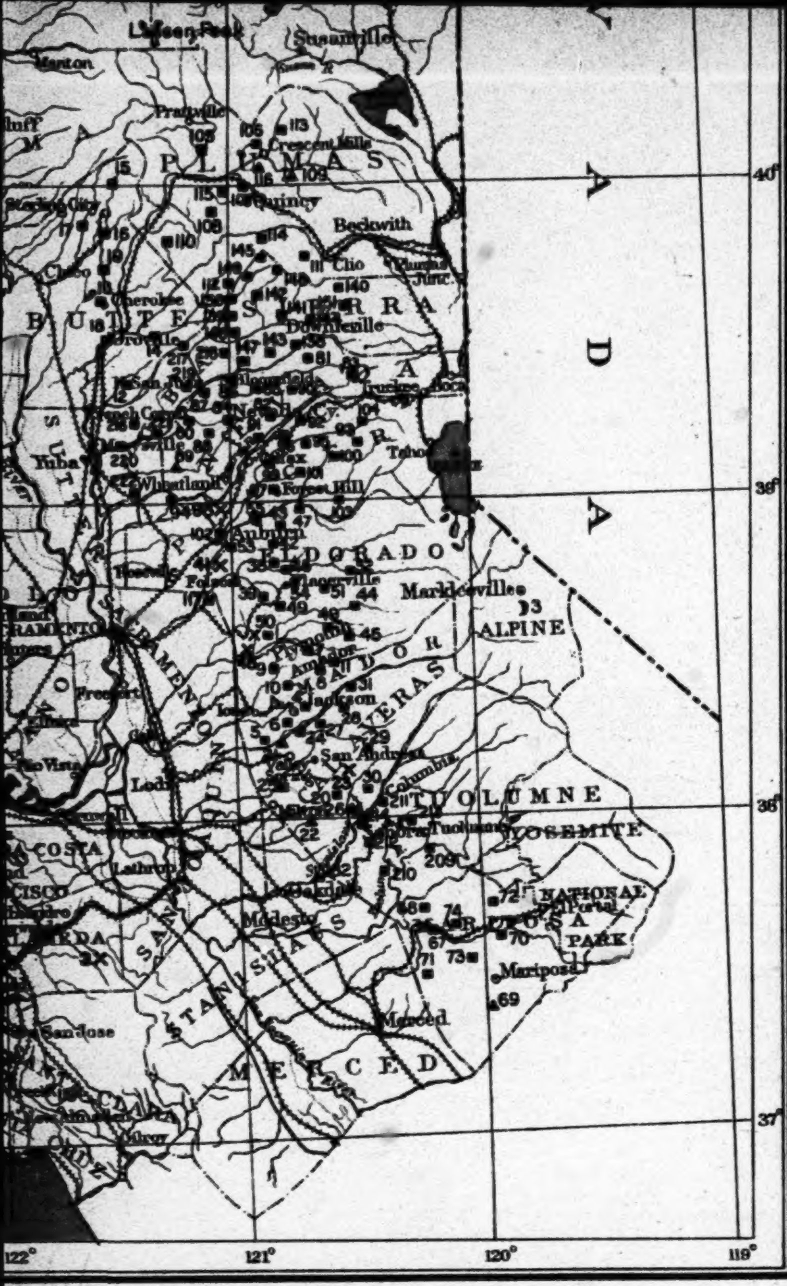
APPROXIMATELY 40 MILES T

25 0 25 50

25 0 25 50 75

1912

JULIUS BIEN CO. LITH. N.Y.


Lassen Peak
Susanville
Manton
Prattville
Crescent Mills
P L U M A S
Quincy
Beckwith
Clio
Plumas Junc.
Oroville
Cherokee
Chico
B U T T E
S I E R R A
Downieville
Truckee
Boca
Nevada City
Grass Valley
Yuba
Marysville
Wheatland
Colfax
Forest Hill
Tahoe
Auburn
E L D O R A D O
Placerville
Folsom
Roseville
Markleeville
ALPINE
Sacramento
Plymouth
Amador
Jackson
Ione
Freeport
Galt
Lodi
San Andreas
Columbia
T U O L U M N E
Sonora
Tuolumne
YOSEMITE
NATIONAL
PARK
M A R I P O S A
Mariposa
Lathrop
Oakdale
Modesto
S T A N I S L A U S
Merced
M E R C E D
San Jose
Gilroy
C A L A V E R A S
S A N J O A Q U I N
N E V A D A
40°
39°
38°
37°
122°
121°
120°
119°

A, SHOWING LOCATION OF MINING DISTRICTS

500,000

MILES TO 1 INCH

50 75 100 Miles

50 75 100 Kilometers

Springs)
22. Copperopolis
23. Esmeralda (Murphy, Sperry)
24. Gwin
25. Jenny Lind
26. Melones (Carson Hill)
27. Mokelumne Hill
28. Railroad Flat
29. Sheep Ranch (Eldorado)
30. Vallecito (Douglas Flat)
31. West Point

COLUSA COUNTY

32. Sulphur Creek

CONTRA COSTA COUNTY

33. Mount Diablo (Ryne)

DEL NORTE COUNTY

34. Crescent City
35. Diamond Creek
36. Low Divide
37. Rattlesnake Divide

ELDORADO COUNTY

38. Coloma
39. Eldorado (Shingle Springs)
40. Fairplay
41. Flagstaff Hill
42. Garden Valley (Greenwood)
43. Georgetown
44. Grizzly Flat
45. Indian Diggings (Brownsville)
46. Kelsey
47. Kentucky Flat (Volcanoville)
48. Latrobe
49. Logtown
50. Nashville
51. Newtown (South Fork Webber Creek)
52. Pacific
53. Pilot Hill
54. Placerville
55. Spanish Diggings

HUMBOLDT COUNTY

56. Blocksburg
57. China Flat
58. Hoopa
59. Klamath
60. Orick
61. Orleans
62. Weitchpec

LAKE COUNTY

63. Baker (Clear Lake)
64. Mayacmas (Great Western)
65. Sulphur Bank

LASSEN COUNTY

66. Hayden Hill

MARIPOSA COUNTY

67. Bagby
68. Coulterville
69. Green Mountain (Ben Hur)
70. Hite Cove
71. Hornitos (Indian Gulch)
72. Kinsley

92. Blue Canyon
93. Canada Hill
94. Dairy Farm (Trent)
95. Damascus
96. Dutch Flat (Gold Run, Towle)
97. Forest Hill
98. Hotaling
99. Iowa Hill
100. Last Chance
101. Michigan Bluff
102. Ophir (Auburn)
103. Ralston Divide
104. Westville

PLUMAS COUNTY

105. Butte Valley (Sunnyside)
106. Crescent Mills (Greenville)
107. Elizabethtown
108. Edmanton (Meadow Valley)
109. Genesee Valley
110. Granite Basin
111. Johnsville (Jamison)
112. La Porte
113. Lights Canyon
114. Sawpit Flat
115. Spanish Ranch
116. Taylorsville

SACRAMENTO COUNTY

117. Folsom (Blue Ravine, Michigan Bar)

SANTA CLARA COUNTY

118. Los Gatos
119. New Almaden

SHASTA COUNTY

120. Afterthought (Ingot)
121. Baird (Heroult)
122. Bayles (Lamoine)
123. Black Diamond
124. Bully Hill (Winthrop)
125. French Gulch
126. Harrison Gulch (Knob)
127. Igo (South Clear Creek)
128. Jerusalem Creek (Ono)
129. Kennett (Squaw Creek, Little Backbone)
130. Keswick (Iron Mountain)
131. Larkin
132. Omitted
133. Redding
134. Shasta
135. Shotgun Creek
136. Stella
137. Whitehouse (Buckeye)

SIERRA COUNTY

138. American Hill
139. Brandy City
140. Church Meadows
141. Downieville (Goodyears Bar)
142. Eureka
143. Forest (Alleghany, Chips Flats, Minnesota)
144. Furnier
145. Gibsonville (Whisky Diggings)

171. Oro Fino (Walker)
172. Preston Peak
173. Sawyers Bar (Rollins)
174. Scotts Bar
175. Somes Bar
176. Summerville

SOLANO COUNTY

177. St. Johns

SONOMA COUNTY

178. Cloverdale
179. Geyserville
180. Guerneville (Great Eastern)
181. Mayacmas (Pine Flat)

STANISLAUS COUNTY

182. Knights Ferry

TEHAMA COUNTY

183. Newville
184. Tom Head

TRINITY COUNTY

185. Altoona (Allens Camp)
186. Big Bar
187. Bully Choop
188. Canyon City
189. Carrville
190. Coffee
191. Colridge
192. Deadwood
193. Dedrick
194. Denny
195. Dodge
196. Dorleska
197. Douglas City
198. Eastman Gulch (Lewiston)
199. Hawkins Creek (Burnt Ranch)
200. Hay Fork
201. Helena
202. Indian Creek
203. Junction City
204. Minersville
205. Slate Creek
206. Swedes Point
207. Trinity Center
208. Weaverville

TUOLUMNE COUNTY

209. Big Oak Flat
210. Chinese Camp (Jacksonville)
211. Columbia
212. Jamestown (Rawhide, Stent)
213. Soulsbyville (Carters)
214. Tuttletown

YOLO COUNTY

215. Knoxville

YUBA COUNTY

216. Browns Valley
217. Brownsville
218. Camptonville
219. Dobbins
220. Marysville (Yuba Basin)
221. Smartsville
222. Wheatland

AMADOR COUNTY—Continued.

8. Pine Grove. Au. (Pl.)
10 miles NE. Jackson, Am. C. R. R.
Terrace gravels.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
Top. sheet Jackson.
Folio 11, 1894.

9. Plymouth (Drytown). Au. (D, Pl.)
12 miles ENE. of May, S. P. R. R.
Slates and greenstone.
Veins.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
1908, pt. 1, pp. 327, 328.
1909, pt. 1, pp. 270–271.
Top. sheet Jackson.
Folios 11, 1894; 63, 1900.

10. Sutter Creek (Amador). Au.
5 miles N. Martell, Am. C. R. R.
Slates and greenstone.
Veins.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
1908, pt. 1, pp. 327–328.
1909, pt. 1, pp. 270–271.
Top. sheet Jackson.
Folios 11, 1894; 63, 1900.

11. Volcano. Au. (Pl.)
13 miles NE. Jackson, Am. C. R. R.
Quaternary and Tertiary gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 199.
Min. Res. 1905, p. 174.
1906, p. 186.
1907, pt. 1, p. 201.
1908, pt. 1, p. 328.
1909, pt. 1, p. 271.
Top. sheet Jackson.
Folio 11, 1894.

BUTTE COUNTY.

12. Bangor. Au. (Pl.)
15 miles SE. Oroville, S. P. R. R.
Tertiary river gravels.
Min. Res. 1906, p. 187.
Top. sheet Smartsville.
Folio 18, 1895.

13. Cherokee. Au, Pt. (Pl.)
12 miles N. Oroville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 86–88.
Min. Res. 1883–84, p. 576.
1906, p. 187.

BUTTE COUNTY—Continued

13. **Cherokee**—Continued.
Min. Res. 1908, pt. 1, p. 329.
Top. sheet Chico.

14. **Forbestown.** Au, Cr.
22 miles E. Oroville, S. P. R. R.
Diorite cut by granite.
Veins.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 587.
Min. Res. 1905, p. 176.
1906, p. 187.
1908, pt. 1, pp. 328, 769.
1909, pt. 1, pp. 271-272.
Top. sheet Bidwell Bar.
Folio 43, 1898.

15. **Inskip.** Au.
7 miles N. Sterling City, B. C. R. R.
Diorite cut by granite.
Veins.
Min. Res. 1906, p. 187.
1908, pt. 1, p. 329.
Top. sheet Chico.

16. **Magalia.** Au. (Pl.)
Station B. C. R. R.
Tertiary river gravels.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 544.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 90-93.
Min. Res. 1906, p. 187.
1907, pt. 1, p. 202.
1908, pt. 1, p. 329.
Top. sheet Chico.

17. **Nimshew.** Au. (Pl.)
21 miles NE. Chico, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 95-98.
Min. Res. 1906, p. 187.
1907, pt. 1, p. 203.
Top. sheet Chico.

18. **Oroville.** Au, Pt. (Pl.)
Station S. P. R. R.
Quaternary gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 86-90
Min. Res. 1883-84, p. 576.
1905, p. 176.
1906, p. 187.
1907, pt. 1, p. 203.
1908, pt. 1, p. 329.
1909, pt. 1, pp. 271-272.
Top. sheet Chico.

19. **Yankee Hill.** Au. (D, Pl.)
21 miles N. Oroville, S. P. R. R.
Schists and greenstones.
Veins and Tertiary river gravels.

BUTTE COUNTY—Continued.

19. **Yankee Hill**—Continued.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 601.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 150–154.
    Min. Res. 1906, p. 187.
    1909, pt. 1, pp. 271–272.
    Top. sheets Chico, Bidwell Bar.
    Folio 43, 1898.

CALAVERAS COUNTY.

20. **Angels.** Au.
    Station S. R. R. of Cal.
    Slates and greenstones.
    Veins.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 675.
    Min. Res. 1905, pp. 174–175.
    1906, p. 188.
    1907, pt. 1, pp. 204–205.
    1908, pt. 1, pp. 330–331.
    1909, pt. 1, p. 273.
    Top. sheet Jackson.
    Folios 11, 1894; 63, 1900.
21. **Campo Seco (Valley Springs).** Cu, Au, Ag, Fe, Cr.
    4 miles N. Valley Springs, S. P. R. R.
    Schists and greenstones.
    Veins and lenses.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 106.
    Harder, E. C., Chromite deposits of California: Bull. 430, 1910, pp. 174–176.
    ——— Iron ores of western and central California: Bull. 430, 1910, pp. 223–225.
    Min. Res. 1882, pp. 226–227.
    1883–84, pp. 341, 570–571.
    1905, pp. 174–175.
    1906, pp. 187–188, 394.
    1907, pt. 1, pp. 205, 601.
    1908, pt. 1, pp. 331, 768.
    1909, pt. 1, p. 273.
    Top. sheet Jackson.
    Folios 11, 1894; 63, 1900.
22. **Copperopolis.** Cu, Au, Ag.
    18 miles ESE. Milton, S. P. R. R.
    Schists cut by greenstones and granite.
    Veins and lenses.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 680.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 106.
    Min. Res. 1887, p. 76.
    1888, p. 59.
    1906, pp. 187–188, 394.
    1907, pt. 1, pp. 204, 601.

CALAVERAS COUNTY—Continued.

22. **Copperopolis**—Continued.
    Min. Res. 1908, pt. 1, p. 331.
    1909, pt. 1, p. 273.

23. **Esmeralda (Murphy, Sperry).** Fe, Au.
    20 miles ESE. Valley Springs, S. P. R. R.
    Slates and greenstones, Tertiary gravels.
    Lenses, Tertiary river gravels.
    Harder, E. C., Iron ores of western and central California: Bull. 430, 1910, pp. 223–224.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 201.
    Top. sheets Jackson and Big Trees.
    Folios 11, 1894; 51, 1898.

24. **Gwin.** Au.
    8 miles NE. Valley Springs, S. P. R. R.
    Slates and greenstones.
    Veins.
    Min. Res. 1905, p. 175.
    1906, p. 188.
    1907, pt. 1, p. 205.
    1908, pt. 1, p. 331.
    Top. sheet Jackson.
    Folios 11, 1894; 63, 1900.

25. **Jenny Lind.** Au. (Pl.)
    6 miles N. Milton, S. P. R. R.
    Tertiary gravels.
    Min. Res. 1905, pp. 174–175.
    1906, p. 188.
    1907, pt. 1, p. 205.
    1908, pt. 1, p. 768.
    1909, pt. 1, p. 273.
    Top. sheet Jackson.
    Folios 11, 1894; 63, 1900.

26. **Melones (Carson Hill).** Au.
    Station S. R. R. of Cal.
    Slates and greenstones.
    Veins.
    Min. Res. 1905, pp. 174–175.
    1907, pt. 1, p. 205.
    1908, pt. 1, p. 331.
    1909, pt. 1, p. 273.
    Top. sheet Big Trees.
    Folios 51, 1898; 63, 1900.

27. **Mokelumne Hill.** Au. (Pl.)
    16 miles NE. Valley Springs, S. P. R. R.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 205–209.
    Min. Res. 1905, p. 174.
    1907, pt. 1, p. 205.
    1908, pt. 1, pp. 331–332.
    1909, pt. 1, p. 273.
    Top. sheet Jackson.
    Folios 11, 1894; 63, 1900.

CALAVERAS COUNTY—Continued.

28. **Railroad Flat.** Au. (Pl.)
    24 miles NE. Valley Springs, S. P. R. R.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 210-212.
    Min. Res. 1907, pt. 1, p. 205.
    1908, pt. 1, p. 332.
    Top. sheet Jackson.
    Folio 11, 1894.
29. **Sheep Ranch (Eldorado).** Au. (D, Pl.)
    27 miles E. Valley Springs, S. P. R. R.
    Slates and greenstone.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 211.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 707.
    Min. Res. 1905, pp. 174–175.
    1906, p. 188.
    1907, pt. 1, pp. 205–206.
    1909, pt. 1, p. 273.
    Top. sheet Big Trees.
    Folio 51, 1898.
30. **Vallecito (Douglas Flat).** Au. (Pl.)
    7 miles NE. Angles Camp, S. R. R. of Cal.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 199–201, 202.
    Min. Res. 1907, pt. 1, p. 206.
    1909, pt. 1, p. 273.
    Top. sheet Big Trees.
    Folios 51, 1898; 63, 1900.
31. **West Point.** Au. (D, Pl.)
    30 miles NE. Valley Springs, S. P. R. R.
    Granite.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 210–211.
    Min. Res. 1907, pt. 1, p. 206.
    1908, pt. 1, p. 332.
    1909, pt. 1, p. 273.
    Top. sheet Jackson.
    Folio 11, 1894.

COLUSA COUNTY.

32. **Sulphur Creek.** Hg.
    25 miles SW. Williams, S. P. R. R.
    Schists and slates.
    Stockworks.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 367.
    Min. Res. 1908, pt. 1, p. 685.
    1909, pt. 1, pp. 289, 552.

CONTRA COSTA COUNTY.

33. **Mount Diablo (Ryne).** Hg (Ag, Au).
    12 miles SE. Martinez, S. P. R. R.
    Schists and slates.
    Stockworks.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 378–379.
    Top. sheet Mount Diablo.

DEL NORTE COUNTY.

34. **Crescent City.** Au, Ag, Pt. (Pl.)
    97 miles SW. Grants Pass, Oreg., S. P. R. R.
    Stream gravels.
    Min. Res. 1897 (Nineteenth Ann. Rept., pt. 6), p. 266.
    1906, p. 188.
    1907, pt. 1, p. 233.
    1909, pt. 1, p. 274.
35. **Diamond Creek.** Au, Ag, Cu, Hg. (D, Pl.)
    65 miles SW. Grants Pass, Oreg., S. P. R. R.
    Serpentine.
    Disseminated.
36. **Low Divide.** Cr.
    117 miles SW. Grants Pass, Oreg., S. P. R. R.
    Serpentine.
    Lenses.
    Min. Res. 1908, pt. 1, p. 768.
37. **Rattlesnake Divide.** Cr.
    120 miles SW. Grants Pass, Oreg., S. P. R. R.
    Serpentine.
    Lenses.
    Min. Res. 1908, pt. 1, p. 768.

ELDORADO COUNTY.

38. **Coloma.** Au. (D, Pl.)
    7 miles NNW. Placerville, S. P. R. R.
    Schists cut by granodiorite.
    Veins, stream gravels.
    Min. Res. 1907, pt. 1, p. 206.
    1909, pt. 1, pp. 273–274.
    Top. sheet Placerville.
    Folio 3, 1894.
39. **Eldorado (Shingle Springs).** Au. (D, Pl.)
    Station S. P. R. R.
    Schists cut by diorite.
    Veins, stream gravels.
    Min. Res. 1906, p. 188.
    1908, pt. 1, p. 333.
    1909, pt. 1, pp. 273–274.
    Top. sheet Placerville.
    Folio 3, 1894.
40. **Fairplay.** Au. (D, Pl.)
    20 miles SE. Placerville, S. P. R. R.
    Granodiorite and andesite.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 180–181.

ELDORADO COUNTY—Continued.

40. **Fairplay**—Continued.
    Min. Res. 1905, p. 175.
    Top. sheet Placerville.
    Folio 3, 1894.

41. **Flagstaff Hill.** Cr.
    9 miles S. Auburn, S. P. R. R.
    Amphibolite and serpentine.
    Lenses.
    Min. Res. 1908, pt. 1, p. 768.
    Top. sheet Sacramento.
    Folio 5, 1894.

42. **Garden Valley (Greenwood).** Au. (D, Pl.)
    12 miles N. Placerville, S. P. R. R.
    Slates and greenstone.
    Veins and stream gravels.
    Min. Res. 1908, pt. 1, pp. 332, 333.
    1909, pt. 1, pp. 273–274.
    Top. sheet Placerville.
    Folio 3, 1894.

43. **Georgetown.** Au. (D, Pl.)
    16 miles N. Placerville, S. P. R. R.; 19 miles E. Auburn, S. P. R. R.
    Slates and greenstone.
    Veins and stream and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 168–169.
    Min. Res. 1906, p. 188.
    1908, pt. 1, pp. 332, 333.
    1909, pt. 1, pp. 273–274.
    Top. sheet Placerville.
    Folio 3, 1894.

44. **Grizzly Flat.** Au. (D, Pl.)
    21 miles ESE. Placerville, S. P. R. R.
    Schists cut by granodiorite.
    Veins, Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 180–181.
    Min. Res. 1907, pt. 1, p. 206.
    1908, pt. 1, pp. 332, 333.
    1909, pt. 1, pp. 273–274.
    Top. sheet Placerville.
    Folio 3, 1894.

45. **Indian Diggings (Brownsville).** Au. (Pl.)
    33 miles SE. Placerville, S. P. R. R.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 180–181.
    Min. Res. 1908, pt. 1, p. 333.
    1909, pt. 1, pp. 273–274.
    Top. sheet Placerville.
    Folio 3, 1894.

46. **Kelsey.** Au.
    5 miles N. Placerville, S. P. R. R.
    Slates and greenstone.
    Veins.

ELDORADO COUNTY—Continued.

46. **Kelsey**—Continued.
Top. sheet Placerville.
Folio 3, 1894.

47. **Kentucky Flat** (Volcanoville). Au. (D, Pl.)
31 miles E. Auburn, S. P. R. R.
Slates and andesite.
Veins and Tertiary river gravels.
Min. Res. 1909, pt. 1, pp. 273-274.
Top. sheet Placerville.
Folio 3, 1894.

48. **Latrobe.** Cr.
Station S. P. R. R.
Serpentine.
Lenses.
Min. Res. 1908, pt. 1, p. 768.
Top. sheet Placerville.
Folio 3, 1894.

49. **Logtown.** Au. (D, Pl.)
5 miles S. El Dorado, S. P. R. R.
Slates cut by diabase and quartz porphyry.
Veins and stream gravels.
Top. sheet Placerville.
Folio 3, 1894.

50. **Nashville.** Au, Hg.
12 miles S. El Dorado, S. P. R. R.
Slates and diabase.
Veins.
Min. Res. 1905, p. 175.
1907, pt. 1, p. 206.
1908, pt. 1, p. 332.
Top. sheet Placerville.
Folio 3, 1894.

51. **Newtown (South Fork Webber Creek).** Au. (Pl.)
8 miles E. Placerville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 178.
Top. sheet Placerville.
Folio 3, 1894.

52. **Pacific.** Au. (Pl.)
19 miles E. Placerville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 169-171.
Top. sheet Placerville.
Folio 3, 1894.

53. **Pilot Hill.** Au, Fe. (D, Pl.)
10 miles SE. Auburn, S. P. R. R.
Schists and slates.
Tertiary river gravels.
Lenses.
Harder, E. C., Chromite deposits in California: Bull. 430, 1910, p. 176.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 164.
Min. Res. 1883-84, p. 286.
1907, pt. 1, p. 206.

ELDORADO COUNTY—Continued.

53. **Pilot Hill**—Continued.
Top. sheet Sacramento.
Folio 5, 1894.

54. **Placerville.** Au. (D, Pl.)
Station, S. P. R. R.
Slates and greenstone; andesite.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 171–180.
Min. Res. 1905, p. 175.
1906, p. 188.
1907, pt. 1, p. 206.
1908, pt. 1, pp. 332–333.
1909, pt. 1, pp. 273–274.
Top. sheet Placerville.
Folio 3, 1894.

55. **Spanish Diggings.** Au.
14 miles E. Auburn, S. P. R. R.
Schists and slates.
Veins.
Min. Res. 1909, pt. 1, pp. 273–274.
Top. sheet Placerville.
Folio 3, 1894.

HUMBOLDT COUNTY.

56. **Blocksburg.** Au, Ag. (Pl.)
76 miles N. Sherwood, 42 miles SSE. Carlotta, N. W. P. R. R.
Stream gravels.
Min. Res. 1906, p. 188.

57. **China Flat.** Au, Ag, Pt. (Pl.)
45 miles ENE. Korbel, A. & M. R. R. R.
Stream gravels.
Min. Res. 1906, p. 188.
1907, pt. 1, p. 207.
1908, pt. 1, p. 333.

58. **Hoopa.** Au, Ag. (Pl.)
33 miles NE. Korbel, A. & M. R. R. R.
Stream gravels.
Min. Res. 1906, p. 188.

59. **Klamath.** Au, Ag. (Pl.)
51 miles NNE. Trinidad, O. & E. R. R.
Stream gravels.
Min. Res. 1906, p. 188.

60. **Orick.** Au, Ag. (Pl.)
25 miles N. Trinidad, O. & E. R. R.
Beach gravels.
Min. Res. 1906, p. 188.

61. **Orleans.** Au, Ag, Pt. (Pl.)
62 miles NE. Korbel, A. & M. R. R. R.
Stream gravels.
Min. Res. 1906, p. 188.
1907, pt. 1, p. 207.
1909, pt. 1, p. 247.

HUMBOLDT COUNTY—Continued.

62. **Weitchpec.** Au, Ag, Pt. (Pl.)
45 miles NE. Korbel, A. & M. R. R. R.
Stream gravels.
Min. Res. 1906, p. 188.
1907, pt. 1, p. 207.

LAKE COUNTY.

63. **Baker (Clear Lake).** Hg.
44 miles NNE. Calistoga, S. P. R. R.
Metamorphosed sediments cut by andesite.
Stockworks.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 233–250; Eighth Ann. Rept., pt. 2, 1889, pp. 974–979.
Min. Res. 1909, pt. 1, p. 553.

64. **Mayacmas (Great Western).** Hg.
16 miles NNW. Calistoga, S. P. R. R.
Mesozoic sediments, greenstone and serpentine, cut by basalt.
Veins, stockworks, and disseminations.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 368–377; Eighth Ann. Rept., pt. 2, 1889, p. 980.
Min. Res. 1882, pp. 394–398.
1883–84, pp. 492–493.
1887, pp. 119–121.
1908, pt. 1, p. 686.
1909, pt. 1, p. 552.

65. **Sulphur Bank.** Hg.
33 miles N. Calistoga, S. P. R. R.
Metamorphosed sediments cut by andesite and basalt.
Disseminations and stockworks.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 251–270; Eighth Ann. Rept., pt. 2, 1889, p. 975.
Min. Res. 1882, pp. 394–398.
1883–84, pp. 492–493.
1887, pp. 119–121.

LASSEN COUNTY.

66. **Hayden Hill.** Au, Ag.
40 miles W. Madeline, N. C. & O. R. R.
Tertiary volcanics (?).
Veins (?).
Min. Res. 1908, pt. 1, p. 358.
1909, pt. 1, p. 289.
Top. sheet Alturas.

MARIPOSA COUNTY.

67. **Bagby.** Au.
Station, Y. V. R. R.
Schists and slates.
Veins.
Min. Res. 1906, p. 190.
1907, pt. 1, p. 211.
1909, pt. 1, p. 277.
Top. sheet Sonora.
Folio 41, 1897.

68. **Coulterville.** Au.
12 miles NE. Varain, Y. V. R. R.
Schists, slates, and serpentines.

MARIPOSA COUNTY—Continued.

68. **Coulterville**—Continued.
    Veins.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 675.
    Min. Res. 1905, p. 175.
    1906, p. 190.
    1907, pt. 1, p. 211.
    1908, pt. 1, p. 337.
    1909, pt. 1, p. 277.
    Top. sheet Sonora.
    Folio 41, 1897.

69. **Green Mountain (Ben Hur).** Cu.
    35 miles SSW. Bagby, Y. V. R. R.
    Diorite, greenstones.
    Veins.
    Min. Res. 1907, pt. 1, pp. 210-211.
    1908, pt. 1, p. 337.
    Top. sheet Mariposa (to be issued).

70. **Hite Cove.** Au.
    15 miles E. Briceburg, Y. V. R. R.
    Slates.
    Veins.
    Min. Res. 1905, p. 175.
    1907, pt. 1, p. 211.
    1909, pt. 1, p. 277.
    Top. sheet Yosemite.

71. **Hornitos (Indian Gulch).** Au, Cu.
    8 miles E. Merced Falls, Y. V. R. R.
    Slates and greenstones.
    Veins.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 661.
    Min. Res. 1905, p. 175.
    1906, p. 190.
    1907, pt. 1, p. 211.
    1908, pt. 1, p. 337.
    1909, pt. 1, p. 277.
    Top. sheet Sonora.
    Folio 41, 1897.

72. **Kinsley.** Au.
    12 miles NNE. Mountain King, Y. V. R. R.
    Slates (?).
    Veins (?).
    Min. Res. 1905, p. 175.
    1906, p. 190.
    1907, pt. 1, p. 211.
    1908, pt. 1, p. 337.
    Top. sheet Yosemite.

73. **Mount Bullion (Whitlock, Mariposa).** Au. (D, Pl.)
    25 miles SE. Bagby, Y. V. R. R.
    Slates and augite porphyry.
    Veins and stream gravels.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 695.

73. **Mount Bullion (Whitlock, Mariposa)**—Continued.
    Min. Res. 1905, p. 175.
        1906, p. 190.
        1907, pt. 1, p. 211.
        1908, pt. 1, p. 337.
        1909, pt. 1, p. 277.
    Top. sheet Sonora.
    Folio 41, 1897.

74. **Quartz Mountain.** Au.
    Mountain King station, Y. V. R. R.
    Slates cut by augite porphyry.
    Veins.
    Top. sheet Sonora.
    Folio 41, 1897.

MODOC COUNTY.

75. **Hoag.** Au, Ag.
    57 miles NNE. Alturas, N. C. & O. R. R.
    Tertiary volcanics
    Veins.
    Min. Res. 1907, pt. 1, p. 234.
    Top. sheet Alturas.

NAPA COUNTY.

76. **Bella Union.** Hg.
    12 miles N. Napa, S. P. R. R.
    Serpentine, greenstone, and Mesozoic sediments cut by andesite and basalt.
    Disseminations and stockworks.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 377.
    Min. Res. 1909, pt. 1, p. 553
    Top. sheet Napa.

77. **Knoxville.** Hg.
    15 miles NW. Knoxville, S. P. R. R.
    Serpentine, greenstone, and Mesozoic sediments cut by basalt.
    Impregnations and stockworks.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 271–290; Eighth Ann. Rept., pt. 2, 1889, p. 977.
    Melville, W. H., and Lindgren, W., Contributions to the mineralogy of the Pacific coast: Bull. 61, 1890, pp. 22, 23–25.
    Min. Res. 1887, pp. 119–121.
        1908, pt. 1, p. 686.
        1909, pt. 1, p. 553.

78. **La Joya (Oat Hill).** Hg.
    St. Helena station, S. P. R. R.
    Serpentine, greenstone, and Mesozoic sediments cut by andesite and basalt.
    Stockworks and impregnations.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 354–358; Eighth Ann. Rept., pt. 2, 1889, p. 980.

79. **Mayacmas (Napa Consolidated).** Hg.
    17 miles N. St. Helena, S. P. R. R.
    Serpentine, greenstone, and Mesozoic sediments cut by andesite and basalt.
    Stockworks and impregnations.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 368–377.

NAPA COUNTY—Continued.

79. **Mayacmas (Napa Consolidated)—Continued.**
    Min. Res. 1882, pp. 394–398.
    1887, pp. 119–121.
    1888, pp. 97–99.
    1908, pt. 1, p. 686.
    1909, pt. 1, p. 553.

NEVADA COUNTY.

80. **French Corral.** Au. (D, Pl.)
    10 miles NW. Nevada City, N. C. N. G. R. R.
    Granodiorite and diabase.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 123–125.
    Min. Res. 1905, p. 179.
    1906, p. 191.
    1907, pt. 1, p. 215.
    1908, pt. 1, p. 341.
    Top. sheet Smartsville.
    Folio 18, 1895.

81. **Graniteville.** Au.
    31 miles ENE. Nevada City, N. C. N. G. R. R.
    Slates cut by granite, andesite.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 99–101.
    Min. Res. 1905, p. 179.
    1906, p. 191.
    1907, pt. 1, p. 215.
    1908, pt. 1, p. 341.
    1909, pt. 1, p. 280.
    Top. sheet Colfax.
    Folio 66, 1900.

82. **Lowell Hill.** Au. (Pl.)
    6 miles N. Dutch Flat, S. P. R. R.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 146–147.
    Min. Res. 1905, p. 179.
    1906, p. 191.
    1907, pt. 1, p. 215.
    1908, pt. 1, p. 341.
    Top. sheet Colfax.
    Folio 66, 1900.

83. **Meadow Lake.** Au.
    30 miles NE. Emigrant Gap, S. P. R. R.
    Schist cut by granodiorite and capped by andesite.
    Veins.
    Lindgren W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 98–99.
    Min. Res. 1907, pt. 1, p. 215.
    Top. sheet Truckee.
    Folio 39, 1897.

NEVADA COUNTY—Continued.

84. **Nevada City (Grass Valley).** Au. (D, Pl.)
Station, N. C. N. G. R. R.
Slates, schists, and granodiorite capped by andesite.
Veins and Tertiary river gravels.
Lindgren, W., Gold-quartz veins of Nevada City and Grass Valley districts, California: Seventeenth Ann. Rept., pt. 2, 1896, pp. 1-262.
——— Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 125-132.
Min. Res. 1905, p. 178.
1906, p. 191.
1907, pt. 1, pp. 213-215.
1908, pt. 1, pp. 339, 340-341.
1909, pt. 1, pp. 278-279.
Top. sheets Smartsville, Nevada City special.
Folios 18, 1895; 29, 1896.

85. **North Bloomfield (Relief).** Au. (Pl.)
14 miles NE. Nevada City, N. C. N. G. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 139-141.
Min. Res. 1905, p. 179.
1906, p. 191.
1907, pt. 1, p. 215.
Top. sheet Colfax.
Folio 66, 1900.

86. **North Columbia (Grizzly Hill).** Au. (D, Pl.)
21 miles N. Nevada City, N. C. N. G. R. R.
Slates, schists, and diorite.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 139.
Min. Res. 1908, pt. 1, p. 341.
Top. sheet Colfax.
Folio 66, 1900.

87. **North San Juan (Badger Hill).** Au. (D, Pl.)
13 miles N. Nevada City, N. C. N. G. R. R.
Slate, granodiorite, and diabase.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 121-125.
Min. Res. 1905, p. 179.
1906, p. 192.
1907, pt. 1, p. 215.
Top. sheet Smartsville.
Folio 18, 1895.

88. **Rough and Ready.** Au. (D, Pl.)
4 miles SW. Grass Valley, N. C. N. G. R. R.
Granodiorite and amphibolite.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 127-132.
Min. Res. 1907, pt. 1, p. 215.
Top. sheet Smartsville.
Folio 18, 1895.

89. **Spenceville.** Cu, Ag, Au.
17 miles NE. Wheatland, S. P. R. R.
Diabase and granodiorite.

NEVADA COUNTY—Continued.

89. **Spenceville**—Continued.
 Veins.
 Min. Res. 1882, pp. 226-227.
  1883-84, pp. 340-341.
  1887, p. 76.
  1907, pt. 1, p. 215.
 Top. sheet Smartsville.
 Folio 18, 1895.

90. **Washington (Omega).** Au. (D, Pl.)
 19 miles ENE. Nevada City, N. C. N. G. R. R.
 Slates and serpentine.
 Veins and stream gravels.
 Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 139-141.
 Min. Res. 1905, p. 179.
  1906, p. 215.
  1908, pt. 1, p. 341.
 Top. sheet Colfax.
 Folio 66, 1900.

91. **You Bet (Little York).** Au. (Pl.)
 4 miles NW. Gold Run, S. P. R. R.
 Tertiary river gravels.
 Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 144.
 Min. Res. 1907, pt. 1, p. 215.
  1909, pt. 1, p. 278.
 Top. sheet Colfax.
 Folio 66, 1900.

PLACER COUNTY.

92. **Blue Canyon.** Au. (D, Pl.)
 Station, S. P. R. R.
 Slates and andesite.
 Veins and Tertiary gravels.
 Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 146.
 Min. Res. 1905, p. 179.
  1906, p. 192.
  1907, pt. 1, p. 218.
  1908, pt. 1, pp. 342-343.
 Top. sheet Colfax.
 Folio 66, 1900.

93. **Canada Hill.** Au. (D, Pl.)
 40 miles E. Colfax, S. P. R. R.
 Slates and andesite.
 Veins and Tertiary river gravels.
 Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 157-158.
 Top. sheets Colfax, Truckee
 Folios 66, 1900; 39, 1897.

94. **Dairy Farm (Trent).** Au, Cu.
 10 miles NE. Sheridan, S. P. R. R.
 Greenstone.
 Veins.
 Min. Res. 1905, p. 179.
  1907, pt. 1, p. 216.
 Top. sheet Smartsville.
 Folio 18, 1895.

PLACER COUNTY—Continued.

95. **Damascus.** Au. (Pl.)
12 miles E. Colfax, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 156–157.
Min. Res. 1905, p. 179.
1906, p. 192.
1907, pt. 1, p. 217.
Top. sheet Colfax.
Folio 66, 1900.

96. **Dutch Flat (Gold Run, Towle).** Au, Cr. (D, Pl.)
Station, S. P. R. R.
Schists and gabbro capped by andesite.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 144–145.
Min. Res. 1905, p. 179.
1906, p. 192.
1907, pt. 1, pp. 216–218.
1908, pt. 1, pp. 342–343, 768.
1909, pt. 1, p. 280.
Top. sheet Colfax.
Folio 66, 1900.

97. **Forest Hill.** Au. (D, Pl.)
15 miles SE. Colfax, S. P. R. R.
Slates, schists, and serpentine capped by andesite.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 149–151, 155–156, 164.
Min. Res. 1905, p. 179.
1906, p. 192.
1907, pt. 1, pp. 216–217.
1908, pt. 1, pp. 343, 768.
1909, pt. 1, p. 280.
Top. sheet Colfax.
Folio 66, 1900.

98. **Hotaling.** Fe.
3½ miles NW. Clipper Gap, S. P. R. R.
Slates, granodiorite, and diabase.
Contact metamorphic.
Harder, E. C., Iron ores of western and central California: Bull. 430, 1910, pp. 225–227.
Min. Res. 1882, pp. 148, 428.
1883–84, pp. 286, 570–571.
1885, pp. 197–199.
Top. sheet Sacramento.
Folio 5, 1894.

99. **Iowa Hill.** Au. (D, Pl.)
9 miles E. Colfax, S. P. R. R.
Slates and amphibolite capped by andesite.
Veins and Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 148–149.
Min. Res. 1905, p. 179.

PLACER COUNTY—Continued.

99. **Iowa Hill**—Continued.
    Min. Res. 1906, p. 192.
    1907, pt. 1, p. 218.
    1908, pt. 1, p. 343.
    1909, pt. 1, p. 280.
    Top. sheet Colfax.
    Folio 66, 1900.

100. **Last Chance.** Au. (D, Pl.)
    42 miles ENE. Auburn, S. P. R. R.
    Slates capped by andesites.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 158.
    Min. Res. 1909, pt. 1, p. 280.
    Top. sheet Colfax.
    Folio 66, 1900.

101. **Michigan Bluff.** Au, Cr. (D, Pl.)
    22 miles SE. Colfax, S. P. R. R.
    Slates and serpentine capped by andesite.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 152–154.
    Min. Res. 1905, p. 179.
    1906, p. 192.
    1907, pt. 1, pp. 216, 218.
    1908, pt. 1, pp. 343, 768.
    1909, pt. 1, p. 280.
    Top. sheet Colfax.
    Folio 66, 1900.

102. **Ophir (Auburn).** Au, Ag. (D, Pl.)
    Station, S. P. R. R.
    Amphibolite and granodiorite capped by andesite.
    Veins, Tertiary and stream gravels.
    Lindgren, W., The gold-silver mines at Ophir, Cal.: Fourteenth Ann. Rept., pt. 2, 1894, pp. 243–284.
    ——— Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 164.
    Min. Res. 1905, p. 179.
    1906, p. 192.
    1907, pt. 1, p. 216.
    1908, pt. 1, p. 342.
    Top. sheet Sacramento.
    Folio 5, 1894.

103. **Ralston Divide.** Au. (Pl.)
    40 miles E. Auburn, S. P. R. R.
    Tertiary river gravels.
    Top. sheets Placerville and Colfax.
    Folios 5 and 66, 1894.

104. **Westville.** Au. (D, Pl.)
    40 miles NE. Auburn, S. P. R. R.
    Slates capped by andesite.
    Veins and Tertiary river gravels.
    Min. Res. 1907, pt. 1, p. 216.
    1908, pt. 1, p. 342.
    Top. sheet Colfax.
    Folio 66, 1894.

PLUMAS COUNTY.

105. **Butte Valley (Sunnyside).** Au. (D, Pl.)
49 miles NE. Sterling City, B. C. R. R.; 71 miles NW. Beckwith, S. V. R. R. and B. & L. R. R.
Slates and greenstone capped by basalt.
Veins and stream gravels.
Top. sheet Lassen Peak.
Folio 15, 1895.

106. **Crescent Mills (Greenville).** Au, Ag, Cu. (D, Pl.)
47 miles NW. Beckwith, S. V. R. R.
Paleozoic sediments cut by granodiorite.
Veins.
Diller, J. S., Geology of the Taylorsville region, California: Bull. 353, 1908, pp. 114–115.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 114–116.
Min. Res. 1905, p. 180.
1907, pt. 1, p. 219.
1908, pt. 1, p. 344.
1909, pt. 1, p. 281.
Top. sheets Indian Valley, Taylorsville, Honey Lake.

107. **Elizabethtown.** Au. (Pl.)
39 miles NW. Clio, S. V. R. R.
Stream gravels.
Diller, J. S., Geology of the Taylorsville region, California: Bull. 353, 1908.
Top. sheets Taylorsville, Indian Valley, Honey Lake.

108. **Edmanton (Meadow Valley).** Au, Mn. (D, Pl.)
38 miles NW. Clio, S. V. R. R.
Slates, amphibolites, granite.
Veins and Tertiary river gravels.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, pp. 270–271.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 98–99.
Min. Res. 1907, pt. 1, p. 101.
1909, pt. 1, p. 281.
Top. sheet Bidwell Bar.
Folio 43, 1898.

109. **Genesee Valley.** Cu, Au.
34 miles NW. Beckwith, S. V. R. R., B. & L. R. R.
Paleozoic and Mesozoic sediments cut by granodiorite and capped by andesite.
Veins.
Diller, J. S., Mineral resources of the Indian Valley region: Bull. 260, 1905, pp. 45–49; Geology of the Taylorsville region: Bull. 353, 1908, pp. 111–121.
Min. Res. 1905, p. 180.
1907, pt. 1, p. 219.
Top. sheets Indian Valley, Genesee, Honey Lake.

110. **Granite Basin.** Au. (D, Pl.)
57 miles NE. Oroville, S. P. R. R.
Amphibolite and granite.
Veins and Tertiary river gravels.
Top. sheet Bidwell Bar.
Folio 43, 1898.

PLUMAS COUNTY—Continued.

111. **Johnsville (Jamison).** Au.
  9 miles W. Clio, S. V. R. R., W. P. R. R.
  Slates, gabbro, augite porphyry.
  Veins and Quaternary gravels.
  Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 111.
  Min. Res. 1905, p. 180.
    1906, p. 192.
    1907, pt. 1, p. 218.
    1908, pt. 1, p. 344.
    1909, pt. 1, p. 281.
  Top. sheet Downieville.
  Folio 37, 1897.

112. **La Porte.** Au. (Pl.)
  47 miles NE. Oroville, S. P. R. R.
  Tertiary river gravels.
  Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 105.
  Min. Res. 1907, pt. 1, p. 218.
    1908, pt. 1, p. 344.
    1909, pt. 1, p. 281.
  Top. sheet Downieville.
  Folio 37, 1897.

113. **Lights Canyon.** Au. (Pl.)
  50 miles NE. Beckwith, S. V. R. R., W. P. R. R.
  Stream gravels.
  Diller, J. S., Geology of the Taylorsville region: Bull. 353, 1908.
  Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 114–116.
  Top. sheets Indian Valley, Genesee, Honey Lake.

114. **Sawpit Flat.** Au. (Pl.)
  60 miles NE. Oroville, S. P. R. R.; 49 miles W. Clio, S. V. R. R.
  Tertiary river gravels.
  Top. sheet Downieville.
  Folio 37, 1897.

115. **Spanish Ranch.** Au, Cr. (Pl.)
  36 miles NW. Clio, S. V. R. R.
  Serpentine.
  Lenses, Tertiary river gravels.
  Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 98–99.
  Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 557.
  Min. Res. 1907, pt. 1, p. 218.
    1908, pt. 1, p. 768.
  Top. sheet Bidwell Bar.
  Folio 43, 1898.

116. **Taylorsville.** Cu, Au. (D, Pl.)
  40 miles NW. Beckwith, S. V. R. R., B. & L. R. R.
  Slates, andesite, granodiorite.
  Veins, stream gravels.
  Min. Res. 1905, p. 180.
    1907, pt. 1, p. 219.
  Top. sheets Taylorsville, Indian Valley, Honey Lake.

SACRAMENTO COUNTY.

117. **Folsom (Blue Ravine, Michigan Bar).** Au. (Pl.)

Stations S. P. R. R.

Quaternary gravels.

Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 164-165, 222.

Min. Res. 1905, p. 181.
1906, p. 193.
1907, pt. 1, pp. 219-220.
1908, pt. 1, p. 345.
1909, pt. 1, p. 282.

Top. sheet Sacramento.

Folio 5, 1894.

SANTA CLARA COUNTY.

118. **Los Gatos.** Cr, Hg.

Station S. P. R. R.

Serpentine.

Lenses.

Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 379.

Min. Res. 1908, pt. 1, p. 768.

119. **New Almaden.** Hg.

13 miles S. San Jose, S. P. R. R.

Mesozoic sediments.

Stockworks.

Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 310-330; Eighth Ann. Rept., 1889, p. 978.

Christy, S. B., Quicksilver reduction at New Almaden, Cal.: Min. Res. 1883-84, pp. 503-536.

Min. Res. 1882, pp. 394-396.
1883-84, p. 492.
1885, p. 284.
1886, pp. 160-165.
1887, pp. 119-121.
1888, pp. 97-99.
1908, pt. 1, p. 690.
1909, pt. 1, p. 553.

SHASTA COUNTY.

120. **Afterthought (Little Cow Creek, Ingot).** Cu, Zn (Pb).

26 miles NE. Redding, S. P. R. R.

Paleozoic sediments cut by alaskite porphyry.

Replacements.

Diller, J. S., Copper deposits of the Redding district, California: Bull. 213, 1903, p. 126.

——— Mining and mineral resources in the Redding quadrangle, California, in 1903: Bull. 225, 1904, pp. 169-179.

Graton, L. C., Occurrence of copper in Shasta County, Cal.: Bull. 430, 1910, pp. 71-111.

Min. Res. 1906, pp. 195, 394.
1907, pt. 1, pp. 224, 599-560.
1908, pt. 1, pp. 205-206, 349.

Top. sheet Redding.

Folio 138, 1906.

SHASTA COUNTY—Continued.

121. **Baird (Heroult).** Fe.
    4 miles N. Heroult, S. V. & E. R. R.
    Paleozoic limestone cut by augite diorite.
    Contact metamorphic.
    Diller, J. S., Iron ores of the Redding quadrangle, California: Bull. 213, 1903, pp. 219-220.
    Top. sheet Redding.
    Folio 138, 1906.

122. **Bayles (Lamoine).** Au. (Pl.)
    Station, S. P. R. R.
    Stream gravels.
    Min. Res. 1907, pt. 1, p. 225.
    1908, pt. 1, p. 349.
    Top. sheets Redding, Red Bluff.
    Folio 138, 1906.

123. **Black Diamond.** Cu, Au, Ag.
    14 miles NE. Redding, S. P. R. R.
    Paleozoic sediments cut by augite diorite.
    Contact metamorphic.
    Diller, J. S., Copper deposits of the Redding district, California: Bull. 213, 1903, p. 130.
    Top. sheet Redding.
    Folio 138, 1906.

124. **Bully Hill (Winthrop).** Cu, Au, Ag.
    Station, S. V. & E. R. R.
    Paleozoic slates, alaskite porphyry.
    Replacements.
    Diller, J. S., Copper deposits of the Redding district, California: Bull. 213, 1903, pp. 126-130.
    ——— Mining and mineral resources in the Redding quadrangle, California, in 1903: Bull. 225, 1904, pp. 169-179.
    Graton, L. C., The occurrence of copper in Shasta County, Cal.: Bull. 430, 1910, pp. 71-111.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 104.
    Min. Res. 1904, p. 239.
    1905, p. 182.
    1906, pp. 195, 392-394.
    1907, pt. 1, pp. 223-224, 599-600.
    1908, pt. 1, pp. 205-206, 349.
    1909, pt. 1, pp. 167, 284.
    Top. sheets Redding, Red Bluff.
    Folio 138, 1906.

125. **French Gulch.** Au, Cu.
    21 miles NW. Redding, S. P. R. R.
    Alaskite porphyry.
    Veins.
    Min. Res. 1906, p. 195.
    1907, pt. 1, p. 224.
    1908, pt. 1, p. 348.
    1909, pt. 1, p. 284.
    Top. sheet Red Bluff.

SHASTA COUNTY—Continued.

126. **Harrison Gulch (Knob).** Au, Ag.
53 miles SW. Redding, S. P. R. R.
Min. Res. 1907, pt. 1, pp. 224–225.
1908, pt. 1, p. 348.
1909, pt. 1, p. 284.
Top. sheet Red Bluff.

127. **Igo (South Clear Creek).** Au. (D, Pl.)
13 miles SW. Redding, S. P. R. R.
Greenstones and slates cut by granodiorite.
Veins, stream gravels.
Min. Res. 1907, pt. 1, p. 225.
1908, pt. 1, p. 348.
Top. sheet Red Bluff.

128. **Jerusalem Creek (Ono).** Au. (Pl.)
21 miles SW. Redding, S. P. R. R.
Stream gravels.
Top. sheet Red Bluff.

129. **Kennett (Squaw Creek, Little Backbone).** Cu, Au, Ag.
Station S. P. R. R.
Paleozoic sediments and alaskite porphyry.
Veins and replacements.
Diller, J. S., Mining and mineral resources in the Redding quadrangle, California, in 1903: Bull. 225, 1904, pp. 169–179.
Graton, L. C., The occurrence of copper in Shasta County, Cal.: Bull. 430, 1910, pp. 71–111.
Min. Res. 1904, p. 239.
1905, pp. 182, 355.
1906, pp. 195, 392–394.
1907, pt. 1, pp. 223, 599–600.
1908, pt. 1, pp. 205–206, 348, 349.
1909, pt. 1, p. 284.
Top. sheets Redding, Red Bluff.
Folio 138, 1906.

130. **Keswick (Iron Mountain).** Cu, Au, Ag.
Station S. P. R. R.
Paleozoic sediments and alaskite porphyry.
Veins and replacements.
Diller, J. S., Copper deposits of the Redding district, California: Bull. 213, 1903, pp. 131–132.
——— Mining and mineral resources in the Redding quadrangle, California, in 1903: Bull. 225, 1904, pp. 169–179.
Graton, L. C., The occurrence of copper in Shasta County, Cal.: Bull. 430, 1910, pp. 71–111.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 103–105.
Min. Res. 1895 (Seventeenth Ann. Rept., pt. 3), p. 103.
1905, pp. 181–182, 355.
1906, pp. 195, 392–394.
1907, pt. 1, pp. 222–223, 599–600.
1908, pt. 1, pp. 205–206, 348, 349.
1909, pt. 1, p. 284.
Top. sheet Redding.
Folio 138, 1906.

SHASTA COUNTY—Continued.

131. **Larkin.** Au, Ag, Cu. (D, Pl.)
8 miles SW. Redding, S. P. R. R.
Paleozoic sediments, meta-andesite, and diorite.
Veins and stream gravels.
Min. Res. 1908, pt. 1, p. 348.
Top. sheet Redding.
Folio 138, 1906.

132. Omitted.

133. **Redding.** Au. (Pl.)
Station S. P. R. R.
Quaternary gravels.
Diller, J. S., Copper deposits of the Redding district, California: Bull. 213, 1903, pp. 123–132.
——— Iron ores of the Redding quadrangle, California: Bull. 213, 1903, pp. 219, 220.
——— Mining and mineral resources in the Redding quadrangle, California, in 1903: Bull. 225, 1904, pp. 169–179.
Min. Res. 1904, p. 239.
Top. sheets Redding, Red Bluff.
Folio 138, 1906.

134. **Shasta.** Au. (D, Pl.)
6 miles W. Redding, S. P. R. R.
Quartz diorite.
Veins and replacements.
Min. Res. 1907, pt. 1, p. 225.
Top. sheet Redding.
Folio 138, 1906.

135. **Shotgun Creek.** Cr.
15 miles NNW. Lamoine, S. P. R. R.
Serpentine.
Lenses.
Min. Res. 1908, pt. 1, pp. 766–767.
Top. sheet Shasta.

136. **Stella.** Au, Cu.
20 miles NW. Redding, S. P. R. R.
Alaskite porphyry.
Veins.
Min. Res. 1907, pt. 1, p. 225.
1908, pt. 1, p. 349.
Top. sheet Red Bluff.

137. **Whitehouse (Buckeye).** Au. (D, Pl.)
5 miles N. Keswick, S. P. R. R.
Meta-andesite.
Veins.
Min. Res. 1908, pt. 1, p. 349.
1909, pt. 1, p. 284.
Top. sheet Redding.
Folio 138, 1906.

SIERRA COUNTY.

138. **American Hill.** Au. (Pl.)
31 miles NE. Nevada City, N. C. N. G. R. R.
Tertiary river gravels.

SIERRA COUNTY—Continued.

138. **American Hill**—Continued.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 142–143.
    Top. sheet Colfax.
    Folio 66, 1900.

139. **Brandy City.** Au. (Pl.)
    31 miles N. Nevada City, N. C. N. G. R. R.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 101.
    Top. sheet Bidwell Bar.
    Folio 43, 1898.

140. **Church Meadows.** Au. (Pl.)
    20 miles W. Loyalton, B. & L. R. R.
    Glacial gravels.
    Top. sheet Downieville.
    Folio 37, 1897.

141. **Downieville (Goodyears Bar).** Au. (D, Pl.)
    63 miles NW. Marysville, S. P. R. R.; 40 miles N. Nevada City, N. C. N. G. R. R.
    Slates and serpentine.
    Veins, stream gravels.
    Min. Res. 1905, p. 182.
    1906, p. 196.
    1907, pt. 1, pp. 225–226.
    1908, pt. 1, pp. 350, 768.
    1909, pt. 1, pp. 284–285.
    Top. sheet Downieville.
    Folio 37, 1897.

142. **Eureka.** Au. (Pl.)
    70 miles NW. Marysville, S. P. R. R.; 50 miles N. Nevada City, N. C. N. G. R. R.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 110.
    Top. sheet Downieville.
    Folio 37, 1897.

143. **Forest (Alleghany, Chips Flats, Minnesota).** Au. (D, Pl.)
    65 miles ENE. Marysville, S. P. R. R.
    Amphibolite and serpentine capped by andesite.
    Veins, Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 112, 113, 142.
    Min. Res. 1905, p. 182.
    1906, pp. 195–196.
    1907, pt. 1, pp. 225–226.
    1908, pt. 1, p. 350.
    1909, pt. 1, p. 285.
    Top. sheet Colfax.
    Folio 66, 1900.

144. **Furnier.** Au.
    69 miles NW. Marysville, S. P. R. R.
    Slates capped by andesite and basalt.
    Veins.
    Top. sheet Downieville.
    Folio 37, 1897.

SIERRA COUNTY—Continued.

145. **Gibsonville (Whisky Diggings).** Au. (D, Pl.)
68 miles NNE. Marysville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 106–107.
Min. Res. 1907, pt. 1, p. 226.
1908, pt. 1, p. 351.
1909, pt. 1, pp. 284–285.
Top. sheet Downieville.
Folio 37, 1897.

146. **Indian Hill.** Au. (Pl.)
50 miles NE. Marysville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 111.
Top. sheet Downieville.
Folio 37, 1897.

147. **Pike.** Au, Cr. (D, Pl.)
52 miles ENE. Marysville, S. P. R. R.
Slates and diabase capped by andesite.
Veins, Tertiary river gravels.
Min. Res. 1907, pt. 1, pp. 225–226.
1908, pt. 1, p. 769.
Top. sheet Colfax.
Folio 66, 1900.

148. **Poker Flat (Table Rock).** Au. (Pl.)
75 miles NE. Marysville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 105.
Min. Res. 1909, pt. 1, pp. 284–285.
Top. sheet Downieville.
Folio 37, 1897.

149. **Port Wine (Queen City, St. Louis).** Au. (D, Pl.)
69 miles NE. Marysville, S. P. R. R.
Slates, andesite, and amphibolite.
Veins, Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 108–110.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 602.
Min. Res. 1908, pt. 1, p. 351.
Top. sheet Downieville.
Folio 37, 1897.

150. **Poverty Hill (Scales, Mount Pleasant).** Au. (Pl.)
59 miles NE. Marysville, S. P. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 105–108.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 600.
Min. Res. 1908, pt. 1, p. 351.
1909, pt. 1, pp. 284–285.
Top. sheet Downieville.
Folio 37, 1897.

SIERRA COUNTY—Continued.

151. **Sierra City (Sierra Butte).** Au. (D, Pl.)
46 miles NW. Truckee, 80 miles ENE. Marysville, S. P. R. R.
Slates, serpentine, quartz porphyry.
Veins, terrace gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 117-118.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 653.
Min. Res. 1905, p. 182.
1907, pt. 1, pp. 225-226.
1908, pt. 1, p. 350.
1909, pt. 1, pp. 284-285.
Top. sheet Sierraville.

SISKIYOU COUNTY.

152. **Beaver Creek.** Hg.
28 miles W. Hornbrook, S. P. R. R.
Granodiorite (?).
Impregnations (?).
Min. Res. 1908, pt. 1, p. 690.
1909, pt. 1, p. 554.
Top. sheet Shasta.

153. **Blue Ledge.** Au, Cu.
40 miles NW. Hornbrook, S. P. R. R.
Granodiorite (?).
Veins (?).
Top. sheet Shasta.

154. **Callahans.** Au. (D, Pl.)
27 miles SW. Gazelle, S. P. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Stream gravels and veins.
Min. Res. 1907, pt. 1, p. 227.
1908, pt. 1, p. 351.
1909, pt. 1, pp. 285-286.
Top. sheet Shasta.

155. **Cecilville.** Au. (D, Pl.)
57 miles SW. Gazelle, S. P. R. R.
Greenstones.
Veins and stream gravels.
Min. Res. 1905, p. 183.
1907, pt. 1, p. 227.
1908, pt. 1, p. 352.
1909, pt. 1, p. 286.

156. **Clear Creek.** Au, Cu. (D, Pl.)
82 miles W. Yreka, Y. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Veins and stream gravels.

157. **Cottage Grove.** Au. (Pl.)
100 miles W. Yreka, Y. R. R.
Stream and terrace gravels.

158. **Cottonwood Creek (Henley, Hornbrook).** Au, Cu. (D, Pl.)
Station S. P. R. R.
Metamorphosed Paleozoic sediments cut by granite and diorite.
Veins, stream and terrace gravels.

SISKIYOU COUNTY—Continued.

158. **Cottonwood Creek (Henley, Hornbrook)**—Continued.
Min. Res. 1908, pt. 1, p. 352.
Top. sheet Shasta.

159. **Deadwood.** Au. (Pl.)
20 miles SW. Yreka, Y. R. R.
Stream gravels.
Top. sheet Shasta.

160. **Etna.** Au. (Pl.)
31 miles SW. Yreka, Y. R. R.
Stream gravels.
Min. Res. 1909, pt. 1, p. 286.
Top. sheet Shasta.

161. **Forks of Salmon.** Au. (Pl.)
74 miles SW. Yreka, Y. R. R.
Stream and terrace gravels.
Min. Res. 1905, p. 183.
1907, pt. 1, p. 227.
1909, pt. 1, p. 286.

162. **Gazelle.** Cr.
10 miles SW. Gazelle, S. P. R. R.
Serpentine.
Lenses.
Min. Res. 1908, pt. 1, p. 769.
Top. sheet Shasta.

163. **Gilta.** Au. (Pl.)
83 miles SW. Yreka, Y. R. R.
Stream gravels.
Min. Res. 1907, pt. 1, p. 227.
1908, pt. 1, p. 352.

164. **Gottville.** Au. (Pl.)
18 miles WSW. Hornbrook, S. P. R. R.
Terrace gravels.
Min. Res. 1908, pt. 1, p. 352.
1909, pt. 1, p. 286.
Top. sheet Shasta.

165. **Hamburg.** Au. (Pl.)
50 miles W. Hornbrook, S. P. R. R.
Stream and terrace gravels.
Min. Res. 1905, p. 183.
1907, pt. 1, p. 227.

166. **Happy Camp (Nolton).** Au. (Pl.)
80 miles W. Hornbrook, S. P. R. R.
Stream and terrace gravels.
Min. Res. 1907, pt. 1, p. 227.

167. **Hawkinsville (Yreka).** Au. (D, Pl.)
Station Y. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Veins and stream gravels.
Min. Res. 1905, p. 183.
1907, pt. 1, p. 227.
1908, pt. 1, p. 352.
1909, pt. 1, p. 286.
Top. sheet Shasta.

SISKIYOU COUNTY—Continued.

168. **Knownothing.** Au. (Pl.)
60 miles WNW. Bayles, S. P. R. R.
Stream gravels.

169. **Oak Bar.** Au, Ag. (D, Pl.)
33 miles W. Hornbrook, S. P. R. R.
Schists, Paleozoic sediments cut by acidic and basic intrusives.
Stream and terrace gravels, veins.
Min. Res. 1907, pt. 1, p. 228.
1908, pt. 1, p. 690.
Top. sheet Shasta.

170. **O'Mears.** Au. (Pl.)
72 miles W. Hornbrook, S. P. R. R.
Stream and terrace gravels.

171. **Oro Fino (Walker).** Au, Cu. (D, Pl.)
23 miles SW. Yreka, Y. R. R.
Schists, Paleozoic sediments cut by acidic and basic intrusives.
Stream and terrace gravels, veins.
Top. sheet Shasta.

172. **Preston Peak.** Au, Cu. (D, Pl.)
80 miles W. Hornbrook, S. P. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Veins, stream and terrace gravels.

173. **Sawyers Bar (Rollins, Black Bear).** Au. (Pl.)
57 miles SW. Yreka, Y. R. R.
Stream and terrace gravels.
Min. Res. 1907, pt. 1, p. 227.
1908, pt. 1, p. 352.
1909, pt. 1, p. 286.

174. **Scotts Bar.** Au. (Pl, D.)
45 miles SW. Hornbrook, S. P. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Stream and terrace gravels, veins.
Min. Res. 1907, pt. 1, pp. 227, 228.

175. **Somes Bar.** Au. (Pl.)
93 miles SW. Yreka, Y. R. R.
Stream and terrace gravels.

176. **Summerville.** Au. (Pl.)
50 miles WNW. Bayles, S. P. R. R.
Stream gravels.

SOLANO COUNTY.

177. **St. Johns.** Hg.
4 miles SE. Vallejo, S. P. R. R.
Metamorphosed sediments.
Stockworks.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 378.
Min. Res. 1908, pt. 1, p. 690.
1909, pt. 1, p. 554.
Top. sheet Carquinez.

SONOMA COUNTY.

178. **Cloverdale.** Cr.
Station N. W. P. R. R.
Serpentine.

SONOMA COUNTY—Continued.

178. **Cloverdale**—Continued.
Lenses.
Min. Res. 1908, pt. 1, p. 769.

179. **Geyserville.** Cr.
Station N. W. P. R. R.
Serpentine.
Lenses.
Min. Res. 1908, pt. 1, p. 769.

180. **Guerneville (Great Eastern).** Hg.
Station N. W. P. R. R.
Mesozoic sediments and serpentine cut by andesite and basalt.
Stockworks, veins, and disseminations.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 362–364; Eighth Ann. Rept., pt. 2, 1889, p. 980.
Min. Res. 1908, pt. 1, pp. 690–691.

181. **Mayacmas (Pine Flat).** Hg.
20 miles E. Geyserville, N. W. P. R. R.
Mesozoic sediments cut by andesite and basalt.
Stockworks, veins, and disseminations.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 368–377.
Min. Res. 1908, pt. 1, p. 691.
1909, pt. 1, p. 554.

STANISLAUS COUNTY.

182. **Knights Ferry.** Au. (Pl.)
12 miles NE. Oakdale, A. T. & S. F. R. R., S. P. R. R.
Quaternary gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 201.

TEHAMA COUNTY.

183. **Newville.** Cr.
70 miles SW. Redding, S. P. R. R.
Serpentine.
Lenses.
Min. Res. 1908, pt. 1, p. 769.

184. **Tom Head.** Cu.
25 miles NW. Red Bluff, S. P. R. R.
Greenstone.
Veins.
Top. sheet Red Bluff.

TRINITY COUNTY.

185. **Altoona (Allens Camp).** Hg, Au. (D, Pl.)
50 miles NW. Bayles, S. P. R. R.
Greenstone, slate, serpentine, and sandstone.
Impregnations and veins.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 366.
Min. Res. 1908, pt. 1, p. 691.
Top. sheet Shasta.

186. **Big Bar.** Au. (Pl.)
78 miles WNW. Redding, S. P. R. R.
Stream gravels.

TRINITY COUNTY—Continued.

186. **Big Bar**—Continued.
Diller, J. S., The auriferous gravels of the Trinity River basin, California: Bull. 470, 1911, p. 22.
Min. Res. 1907, pt. 1, p. 229.
1909, pt. 1, p. 287.

187. **Bully Choop.** Au.
70 miles W. Redding, S. P. R. R.
Basic intrusives.
Veins.
Min. Res. 1909, pt. 1, p. 287.
Top. sheet Red Bluff.

188. **Canyon City.** Au. (Pl, D.)
56 miles NW. Redding, S. P. R. R.
Greenstone.
Stream gravels, veins.

189. **Carrville.** Au, Ag, Cu. (D, Pl.)
33 miles NW. Bayles, S. P. R. R.
Greenstones and slates cut by acidic and basic intrusives.
Stream and terrace gravels, veins, and replacements.
MacDonald, D. F., Notes on the gold lodes of the Carrville district, Trinity County, Cal.: Bull. 530, 1912.
Min. Res. 1907, pt. 1, pp. 228–229.
1908, pt. 1, p. 353.
1909, pt. 1, p. 287.
Top. sheet Shasta.

190. **Coffee.** Au. (Pl, D.)
40 miles NW. Bayles, S. P. R. R.
Serpentine and granodiorite cut by basic dikes.
Veins and stream gravels.
MacDonald, D. F., The Weaverville-Trinity Center gold gravels, Trinity County, Cal.: Bull. 430, 1910, pp. 48–58.
Min. Res. 1905, p. 184.
1907, pt. 1, p. 229.
1909, pt. 1, p. 287.
Top. sheet Shasta.

191. **Colridge.** Au, Hg. (D, Pl.)
77 miles NW. Redding, S. P. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Stream gravels, veins.

192. **Deadwood.** Au.
31 miles NW. Redding, S. P. R. R.
Paleozoic sediments cut by acidic and basic intrusives.
Veins (?).
Min. Res. 1907, pt. 1, p. 229.
1908, pt. 1, p. 353.
1909, pt. 1, p. 287.
Top. sheet Red Bluff.

193. **Dedrick.** Au. (D, Pl.)
48 miles WNW. Bayles, S. P. R. R.
Hornblende schist.
Veins, terrace gravels.
Min. Res. 1907, pt. 1, p. 229.
1908, pt. 1, p. 353.
1909, pt. 1, p. 287.

TRINITY COUNTY—Continued.

194. **Denny.** Au, Ag, Pt, Cu. (D, Pl.)
150 miles NW. Redding, S. P. R. R.
Paleozoic sediments cut by basic intrusives.
Veins, stream gravels.
Min. Res. 1907, pt. 1, p. 229.
1908, pt. 1, p. 353.
1909, pt. 1, p. 287.

195. **Dodge.** Au. (Pl.)
47 miles SSW. Gazelle, S. P. R. R.
Terrace and stream gravels.
Top. sheet Shasta.

196. **Dorleska.** Au. (D, Pl.)
55 miles WNW. Bayles, S. P. R. R.
Serpentine, limestone, and shale cut by basic intrusives.
Veins.
MacDonald, D. F., Notes on the gold lodes of the Carrville district, Trinity County, Cal.: Bull. 530, 1912.
Min. Res. 1905, p. 184.
1907, pt. 1, p. 229.
1908, pt. 1, p. 353.
1909, pt. 1, p. 287.
Top. sheet Shasta.

197. **Douglas City.** Au. (D, Pl.)
57 miles W. Redding, S. P. R. R.
Mica and hornblende shist.
Stream and terrace gravels, veins.
Diller, J. S., The auriferous gravels of the Trinity River basin, California: Bull. 470, 1911, pp. 18–20.
Min. Res. 1907, pt. 1, p. 229.
1908, pt. 1, pp. 353–354.
1909, pt. 1, p. 287.
Top. sheet Red Bluff.

198. **Eastman Gulch (Lewiston).** Au. (D, Pl.)
36 miles NW. Redding, S. P. R. R.
Paleozoic sediments cut by greenstone.
Stream gravels, veins.
Min. Res. 1909, pt. 1, p. 287.
Top. sheet Red Bluff.

199. **Hawkins Creek (Burnt Ranch).** Au. (Pl.)
105 miles WNW. Redding, S. P. R. R.
Terrace and stream gravels.
Min. Res. 1907, pt. 1, pp. 228, 229.
1908, pt. 1, p. 353.

200. **Hay Fork.** Au, Pt. (Pl.)
78 miles W. Redding, S. P. R. R.
Stream and terrace gravels.
Diller, J. S., The auriferous gravels of the Trinity River basin, California: Bull. 470, 1911, p. 21.
Min. Res. 1897–98, p. 267.
1907, pt. 1, p. 229.
1909, pt. 1, p. 287.

201. **Helena.** Au. (Pl.)
67 miles NW. Redding, S. P. R. R.

TRINITY COUNTY—Continued.

201. **Helena**—Continued.
Stream and terrace gravels.
Min. Res. 1907, pt. 1, p. 229.
1909, pt. 1, p. 287.

202. **Indian Creek.** Au. (Pl.)
85 miles W. Redding, S. P. R. R.
Stream and terrace gravels.
Min. Res. 1907, pt. 1, p. 229.
Top. sheet Red Bluff.

203. **Junction City.** Au, Pt. (Pl.)
59 miles WNW. Redding, S. P. R. R.
Stream and terrace gravels.
Kemp, J. F., The geological relations and distribution of platinum and associated metals: Bull. 193, 1902, pp. 51–54.
MacDonald, D. F., The Weaverville-Trinity Center gold gravels, Trinity County, Cal.: Bull. 430, 1910, pp. 48–58.
Min. Res. 1905, p. 184.
1909, pt. 1, p. 287.

204. **Minersville.** Au. (Pl.)
44 miles NW. Redding, S. P. R. R.
Stream and terrace gravels.
MacDonald, D. F., The Weaverville-Trinity Center gold gravels, Trinity County, Cal.: Bull. 430, 1910, pp. 48–58.
Min. Res. 1905, p. 184.
1907, pt. 1, p. 229.
1909, pt. 1, p. 287.
Top. sheet Red Bluff.

205. **Slate Creek.** Au. (Pl.)
54 miles NW. Redding, S. P. R. R.
Stream gravels.
Top. sheet Red Bluff.

206. **Swedes Point.** Au. (Pl.)
88 miles WNW. Redding, S. P. R. R.
Terrace gravels.

207. **Trinity Center.** Au. (Pl.)
29 miles W. Bayles, S. P. R. R.
Stream and terrace gravels.
MacDonald, D. F., The Weaverville-Trinity Center gold gravels, Trinity County, Cal.: Bull. 430, 1910, pp. 48–58.
——— Notes on the gold lodes of the Carrville district, Trinity County, Cal.: Bull. 530, 1912.
Min. Res. 1905, p. 184.
1907, pt. 1, pp. 228, 229.
1908, pt. 1, p. 354.
1909, pt. 1, p. 287.
Top. sheet Shasta.

208. **Weaverville.** Au. (Pl.)
50 miles NW. Redding, S. P. R. R.
Terrace and stream gravels.
Diller, J. S., The auriferous gravels of the Trinity River basin, California: Bull. 470, 1911, pp. 15–18, 25.
MacDonald, D. F., The Weaverville-Trinity Center gold gravels, Trinity County, Cal.: Bull. 430, 1910, pp. 48–58, 1909.

TRINITY COUNTY—Continued.

208. **Weaverville**—Continued.
    Min. Res. 1905, pp. 183, 184.
    1907, pt. 1, pp. 228, 229.
    1909, pt. 1, p. 287.
    Top. sheet Red Bluff.

TUOLUMNE COUNTY.

209. **Big Oak Flat.** Au. (D, Pl.)
    16 miles E. Chinese Camp, S. R. R. of Cal.
    Slates cut by granodiorite.
    Veins.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 217.
    Min. Res. 1905, p. 175.
    1907, pt. 1, p. 230.
    1908, pt. 1, p. 355.
    1909, pt. 1, p. 288.
    Top. sheet Sonora.
    Folio 41, 1897.
210. **Chinese Camp (Jacksonville).** Au, Cr. (Pl, D.)
    Station S. R. R. of Cal.
    Slates and serpentine.
    Tertiary river gravels, lenses.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 217.
    Min. Res. 1905, p. 175.
    1907, pt. 1, p. 232.
    1908, pt. 1, p. 769.
    1909, pt. 1, p. 288.
    Top. sheet Sonora.
    Folios 41, 1897; 63, 1900.
211. **Columbia.** Au. (Pl.)
    4 miles N. Sonora, S. R. R. of Cal.
    Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 212–213.
    Min. Res. 1905, p. 175.
    1908, p. 355.
    1909, pt. 1, p. 288
    Top. sheet Big Trees.
    Folios 51, 1898; 63, 1900.
212. **Jamestown (Rawhide, Stent).** Au. (Pl, D.)
    Station S. R. R. of Cal.
    Slates, serpentine, and amphibolites.
    Veins and Tertiary river gravels.
    Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 217–218.
    Min. Res. 1905, pp. 175–176.
    1907, pt. 1, p. 231.
    1908, pt. 1, pp. 355–356. 769.
    1909, pt. 1, p. 288.
    Top. sheet Sonora.
    Folios 41, 1897; 63, 1900.
213. **Soulsbyville (Carters).** Au
    Station S. R. R. of Cal.
    Granodiorite.

TUOLUMNE COUNTY—Continued.

213. Soulsbyville (Carters)—Continued
Veins.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 217.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, pp. 676-677.
Min. Res. 1905, p. 175.
1907, pt. 1, pp. 230-231, 232.
1908, pt. 1, p. 356.
1909, pt. 1, p. 288.
Top. sheet Sonora.
Folio 41, 1897.

214. Tuttletown. Au.
Station S. R. R. of Cal.
Slates and amphibolites.
Veins.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, p. 217.
Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 675.
Min. Res. 1908, pt. 1, p. 356.
1909, pt. 1, p. 288.
Top. sheet Sonora.
Folios 41, 1897; 63, 1900.

YOLO COUNTY.

215. Knoxville. Hg.
5 miles W. Tancred, S. P. R. R.
Mesozoic sediments and serpentine cut by andesite and basalt.
Stockworks and disseminations.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 271-290; Eighth Ann. Rept., pt. 2, 1889, p. 976.

YUBA COUNTY.

216. Browns Valley. Au.
13 miles NW. Marysville, S. P. R. R.
Diabase.
Veins.
Min. Res. 1907, pt. 1, p. 233.
1909, pt. 1, p. 289.
Top. sheet Smartsville.
Folio 18, 1895.

217. Brownsville. Au. (Pl, D.)
34 miles NE. Marysville, 36 miles E. Oroville, S. P. R. R.
Greenstone and diorite.
Tertiary river gravels and veins.
Min. Res. 1907, pt. 1, p. 233.
1908, pt. 1, p. 357.
1909, pt. 1, p. 289.
Top. sheet Smartsville.
Folio 18, 1895.

218. Camptonville. Au. (Pl.)
47 miles NE. Marysville, S. P. R. R.; 23 miles N. Nevada City, N. C. N. G. R. R.
Tertiary river gravels.

YUBA COUNTY—Continued.

218. **Camptonville**—Continued.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 105-108, 123.
Min. Res. 1909, pt. 1, p. 289.
Top. sheet Smartsville.
Folio 18, 1895.

219. **Dobbins.** Au.
30 miles NE. Marysville, S. P. R. R.
Granodiorite.
Veins.
Min. Res. 1907, pt. 1, p. 233.
1909, pt. 1, p. 289.
Top. sheet Smartsville.
Folio 18, 1895.

220. **Marysville (Yuba Basin).** Au. (Pl.)
Station S. P. R. R.
Quaternary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 120, 221-222.
Min. Res. 1907, pt. 1, p. 232.
1909, pt. 1, p. 289.
Top. sheet Smartsville.
Folio 18, 1895.

221. **Smartsville.** Au. (Pl.)
27 miles E. Marysville, S. P. R. R.; 14 miles W. Grass Valley, N. C. N. G. R. R.
Tertiary river gravels.
Lindgren, W., Tertiary gravels of the Sierra Nevada: P. P. 73, 1911, pp. 123-125.
Min. Res. 1907, pt. 1, p. 232.
1908, pt. 1, p. 357.
Top. sheet Smartsville.
Folio 18, 1895.

222. **Wheatland.** Au. (Pl.)
Station S. P. R. R.
Quaternary gravels.
Min. Res. 1907, pt. 1, pp. 232, 233.
Top. sheets Smartsville, Wheatland.
Folio 18, 1895.

CALIFORNIA, SOUTHERN COUNTIES.

In the 17 southern counties of California there are 191 regions which the Survey has called mining districts for convenience of reference. Of this number 9 produce mainly iron or chromium, 11 quicksilver, 3 rare metals, 129 gold, 19 copper, 12 silver, and 7 lead. In on district the principal metal is unknown.

Distribution of the predominant metals produced in the mining districts of the souther counties of California.

County.	Gold.	Silver.	Copper.	Lead.	Iron.	Quicksilver.	Rare metals.	Unknown.	Total.
Fresno	3	....	2	....	....	1	....	....	[illegible]
Imperial	4	....	....	....	....	....	....	....	[illegible]
Inyo	19	6	4	6	....	....	....	1	[illegible]
Kern	22	1	2	....	....	....	....	....	[illegible]
Los Angeles	7	....	....	....	....	....	....	....	[illegible]
Madera	6	....	1	....	1	....	....	....	[illegible]
Mono	12	2	....	....	....	....	....	....	[illegible]
Monterey	2	....	....	....	....	2	....	....	[illegible]
Orange	....	....	....	1	....	....	....	....	[illegible]
Riverside	9	....	....	....	....	....	2	....	11
San Benito	....	....	....	....	....	3	....	....	[illegible]
San Bernardino	27	3	8	....	6	....	1	....	[illegible]
San Diego	9	....	1	....	....	....	....	....	[illegible]
San Luis Obispo	1	....	....	....	2	4	....	....	[illegible]
Santa Barbara	....	....	....	....	....	1	....	....	[illegible]
Tulare	5	....	1	....	....	....	....	....	[illegible]
Ventura	2	....	....	....	....	....	....	....	[illegible]
	129	12	19	7	9	11	3	1	191

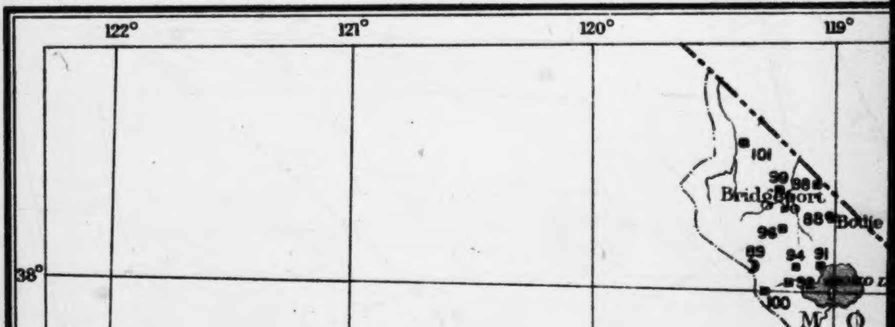
MINING DISTRICTS IN SOUTHERN COUNTIES OF CALIFORNIA.

[See Pl. V. Additional references may be found in Mineral Resources for 1910 and 1911.]

FRESNO COUNTY.

1. **Big Dry Creek.** Cu, Au.
    11 miles ENE. Clovis, S. P. R. R.
    Mica schists and granite cut by basic dikes.
    Lenses.
2. **Mexican.** Hg.
    25 miles W. Mendota, S. P. R. R.
    Upper Cretaceous (Chico) sandstone.
    Dissemination.
    Min. Res. 1908, pt. 1, p. 685.
3. **Mill Creek.** Au, Ag. (D, Pl.)
    22 miles W. Sanger, S. P. R. R.
    Schists and granite.
    Veins.
4. **Pollasky.** Cu.
    Friant station, S. P. R. R.
    Schists and granite.
    Veins.
    Min. Res. 1909, pt. 1, pp. 274–275.
5. **Sycamore.** Au.
    30 miles NE. Clovis, S. P. R. R.
    Granite, slate, and schist.
    Veins.
    Top. sheet Kaiser.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR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Kerman
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Hollister
San Juan
Castroville
Salinas
Bay of Monterey
Monterey
M O N T E R E Y
Salinas River
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Hanford
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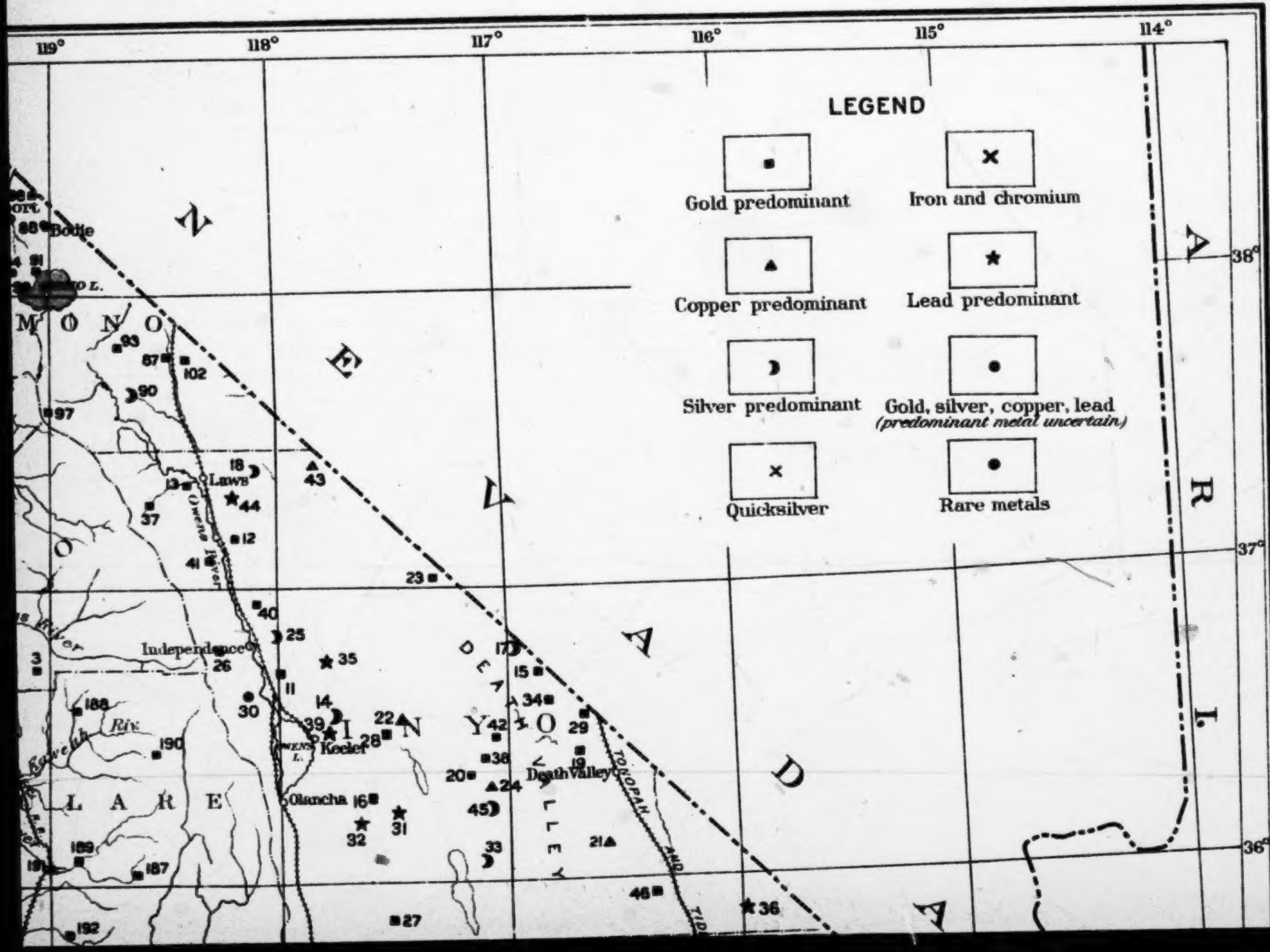
LEGEND
Gold predominant
Iron and chromium
Copper predominant
Lead predominant
Silver predominant
Gold, silver, copper, lead
(predominant metal uncertain)
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Independence
Keeler
Olancha
Death Valley
DEATH VALLEY
TONOPAH AND TIDEWATER
Owens L.
Kaweah Riv.

LIST OF MINI

FRESNO COUNTY

1. Big Dry Creek
2. Mexican
3. Mill Creek
4. Pollasky
5. Sycamore
6. Temperance Flat

IMPERIAL COUNTY

7. Cargo Muchacho (Hedges, Ogilby)
8. Picacho
9. White Gold Basin
10. Potholes

INYO COUNTY

11. Beveridge
12. Big Pine
13. Bishop Creek
14. Cerro Gordo
15. Chloride Cliff
16. Darwin
17. Daylight
18. Deep Springs (Pine Mountain)
19. Echo Canyon (Schwaub)
20. Emigrant
21. Furnace Creek (Greenwater)
22. Goldbelt
23. Grapevine Canyon
24. Harrisburg
25. Independence (Paiute, Waucoba)
26. Kearsarge
27. Kelley

KERN COUN

70. Vaughn
71. Woody

LOS ANGEL

72. Arrastre
73. Azusa (K
74. Baldy M
75. Cedar
76. Gleason
77. Soledad
78. Tujunga

MADERA

79. Coarse G
80. Daulton
81. Fine Gol
82. Grub Gu
83. Hildreth
84. Minarets
85. North Fo
86. Potter R

MONO

87. Blind Sp
88. Bodie
89. Castle P
90. Cloverpa
91. Dogtown
92. Homer (
93. Indian
94. Jordan
95. Omitted
96. Keith
97. Lakes (M
98. Masonic
99. Patterson

IST OF MINING DISTRICTS

KERN COUNTY (Continued)

70. Vaughn
71. Woody

LOS ANGELES COUNTY

72. Arrastre Canyon (Newhall)
73. Azusa (Kern)
74. Baldy Mountain
75. Cedar
76. Gleason Mountain
77. Soledad (Acton)
78. Tujunga

MADERA COUNTY

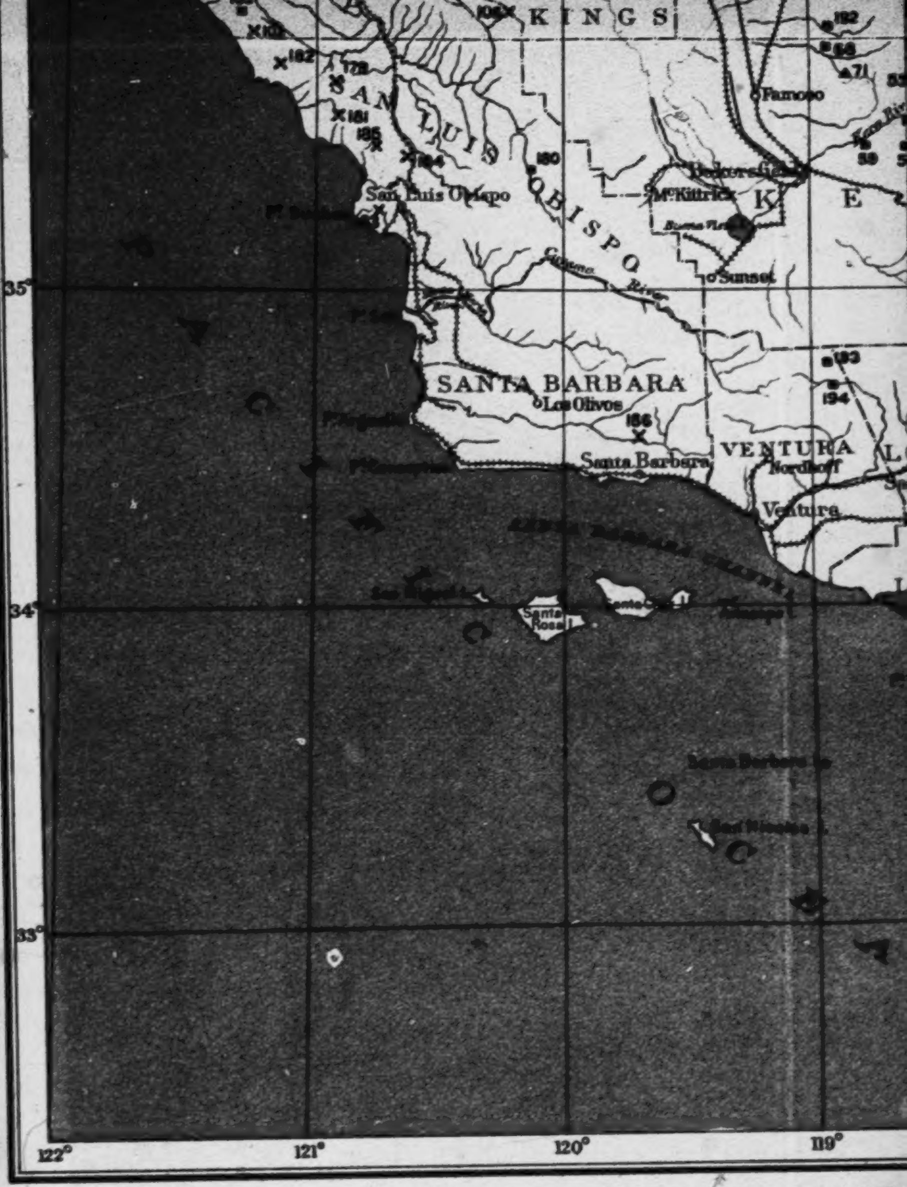
79. Coarse Gold
80. Daulton
81. Fine Gold
82. Grub Gulch
83. Hildreth
84. Minarets (Mt. Raymond)
85. North Fork
86. Potter Ridge

MONO COUNTY

87. Blind Spring
88. Bodie
89. Castle Peak
90. Cloverpatch
91. Dogtown Diggings
92. Homer (Lundy)
93. Indian
94. Jordan
95. Omitted
96. Keith
97. Lakes (Mammoth)
98. Masonic
99. Patterson

SAN BERNARDINO COUNTY (Continued)

130. Cima
131. Cottonwood
132. Crackerjack
133. Dry Lake
134. Garlic Spring
135. Grapevine
136. Hart
137. Helen
138. Holcomb
139. Ibex
140. Iron Mountain
141. Ivanpah (Copper World)
142. Kane Springs
143. Kelso
144. Kewanee
145. Kingston Range
146. Knob Peak
147. Lava Beds (Newberry)
148. Monument Peak (Whipple Mountain)
149. Morongo (Lone Valley?)
150. Needles
151. New York (Manvel, Barnwell)
152. Ord
153. Oro Grande
154. Owl Holes
155. San Antonio
156. Shadow Mountains
157. Signal (Vontrigger)
158. Silver Mountain
159. Spangler
160. Stedman
161. Stringer
162. Omitted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Los Olivos
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MAP OF SOUTHERN COUNTIES OF C

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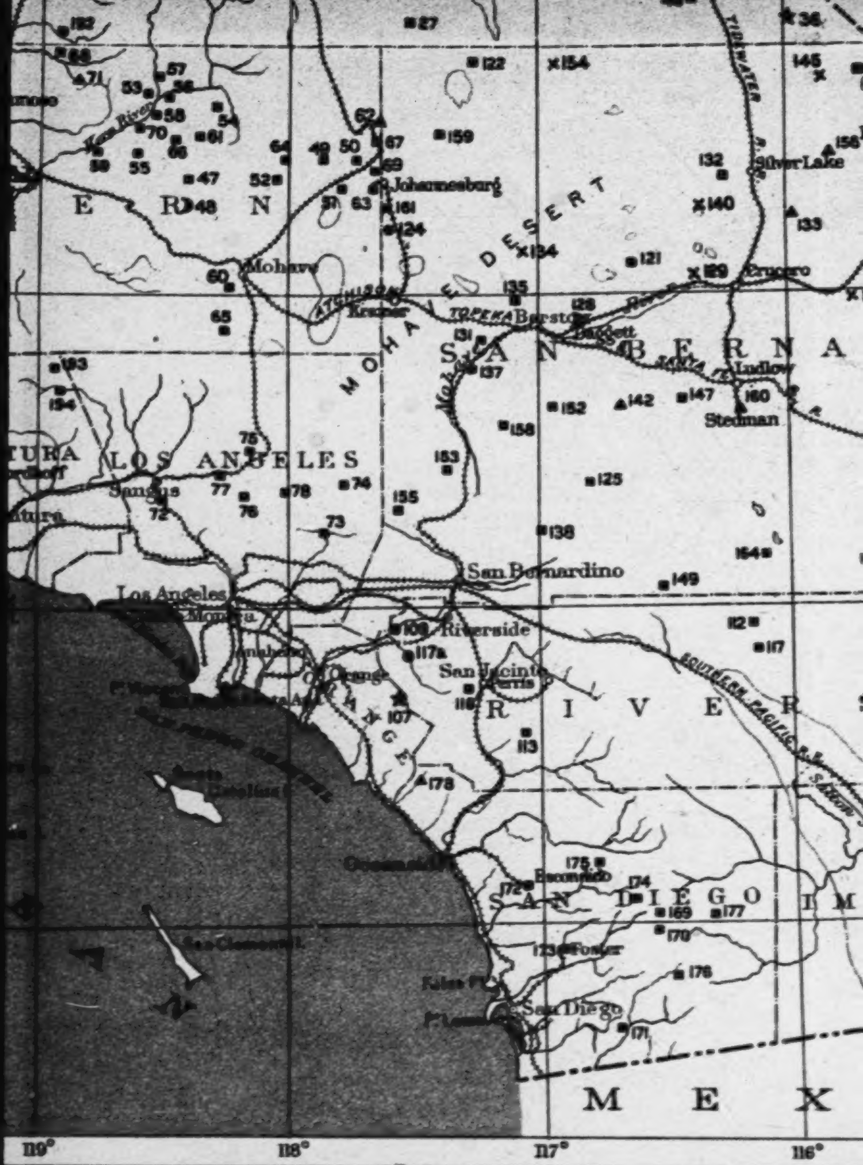
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Daggett
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Santa Fe
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Stedman
Mohave R.
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San Bernardino
Los Angeles
Monrovia
Riverside
Anaheim
Orange
San Jacinto
Perris
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San Pedro Channel
Santa Catalina I.
San Clemente I.
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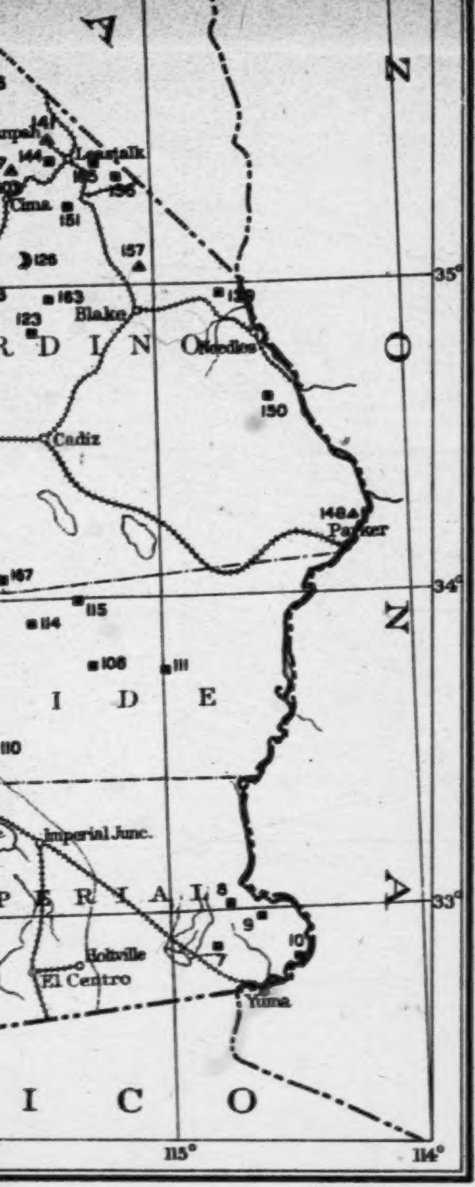

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26. Kearsarge
27. Kelley
28. Lee
29. Lees Camp
30. Lone Pine
31. Lookout (Modoc)
32. New Coso
33. Panamint (Ballarat)
34. Poison Spring
35. Russ
36. Saratoga (Tecopa Mountain)
37. Sherwin
38. Skidoo
39. Swansea (Keeler, Kruger)
40. Tibbet
41. Tinemaha (Fish Springs)
42. Tucki Mountain
43. Ubehebe
44. Union
45. Wildrose
46. Willow

KERN COUNTY

47. Agua Caliente
48. Amalie (Paris)
49. Big Dixie
50. Black Mountain
51. Garlock
52. Goler
53. Greenhorn Mountains
54. Green Mountain
55. Havilah
56. Isabella
57. Kernville
58. Keysville
59. Long Tom
60. Mohave
61. Piute Mountain
62. Rademacher
63. Randsburg
64. Red Rock
65. Rosamond
66. San Emigdio
67. Searles
68. Slate Range
69. Summit

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98. Masonic
99. Patterson
100. Tioga
101. West Walker
102. White Peak

MONTEREY COUNTY

103. Dutra
104. Jolon
105. Los Burros
106. Table Mountain

ORANGE COUNTY

107. Trabuco Canyon

RIVERSIDE COUNTY

108. Chuckwalla
109. Corona
110. Dos Palmas
111. Ironwood
112. Lost Horse
113. Menifee (Auld)
114. Monte Negro (Eagle Mountain)
115. Onward
116. Perris
117. Pinyon Mountain
117a. Temescal Mts. (San Jacinto)

SAN BENITO COUNTY

118. Central Benito
119. New Idria
120. Stayton (McLeod, Panoche)

SAN BERNARDINO COUNTY

121. Alvord
122. Arondo (Slate Range)
123. Arrowhead
124. Atolia
125. Blackhawk (Silver Reef)
126. Brightwood (Providence Mountains)
127. Bullion (Standard)
128. Calico (Daggett)
129. Cave Canyon

161. [illegible]
162. Omitted
163. Trojan (Providence)
164. Twentynine Palms
165. Vanderbilt
166. Omitted
167. Virginia Dale (Monte Negro)
168. Omitted

SAN DIEGO COUNTY

169. Banner
170. Cuyamaca
171. Dulzura
172. Escondido
173. Foster (San Vicente)
174. Julian
175. Mesa Grande
176. Pine Valley
177. Rice
178. San Mateo (Pinacate)

SAN LUIS OBISPO COUNTY

179. Adelaide (Klau)
180. La Panza
181. Oceanic (Santa Rosa)
182. Ocean View (Pine Peak)
183. Perfumo Canyon
184. Rinconada (Santa Margarita)
185. San Luis Obispo (Santa Lucia)

SANTA BARBARA COUNTY

186. Los Prietos

TULARE COUNTY

187. Bald Mountain
188. Finger Rock
189. Globe
190. Mineral King
191. Porterville
192. White River

VENTURA COUNTY

193. Frazier Mountain
194. Snowy Creek (Piru Creek)

FRESNO COUNTY—Continued.

6. **Temperance Flat.** Au.
   12 miles E. Friant, S. P. R. R.

IMPERIAL COUNTY.

7. **Cargo Muchacho (Hedges, Ogilby).** Au.
   5 miles NE. Ogilby, S. P. R. R.
   Schists cut by pegmatite.
   Veins.
   Min. Res. 1905, p. 181.
   1907, pt. 1, p. 234.
   1909, pt. 1, p. 289.
   Top. sheet Yuma.
8. **Picacho.** Au. (D, Pl.)
   25 miles NNW. Yuma, S. P. R. R.
   Schist and granite capped by Tertiary volcanics.
   Impregnations, and wash gravels.
   Min. Res. 1909, pt. 1, p. 289.
9. **White Gold Basin.** Au, Ag. (D, Pl.)
   22 miles NNW. Yuma, S. P. R. R.
   Min. Res. 1907, pt. 1, p. 234.
   Top. sheet Yuma.
10. **Potholes.** Au. (Pl, D.)
   12 miles NNE. Yuma, S. P. R. R.
   Gneiss.
   Veins.
   Top. sheet Yuma.

INYO COUNTY.

11. **Beveridge.** Au.
   10 miles NE. Whitney, S. P. R. R.
   Paleozoic sediments cut by granite.
   Veins.
   Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206-212.
   Top. sheet Mount Whitney.
12. **Big Pine.** Au, Ag, Pb.
   Alvord station, S. P. R. R.
   Paleozoic sediments cut by granite.
   Veins.
   Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206-212.
   Min. Res. 1907, pt. 1, p. 207.
   1908, pt. 1, p. 334.
   1909, pt. 1, p. 275.
13. **Bishop Creek.** Au, Ag, Cu.
   5 miles SW. Laws, S. P. R. R.
   Paleozoic sediments cut by granite.
   Veins.
   Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206-212.
   Min. Res. 1907, pt. 1, p. 207.
   1908, pt. 1, p. 335.
14. **Cerro Gordo.** Ag, Pb, Au, Cu, Fe.
   28 miles NE. Keeler, S. P. R. R.
   Paleozoic sediments cut by granite.
   Contact metamorphic, replacements.

INYO COUNTY—Continued.

14. **Cerro Gordo**—Continued.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.
    Min. Res. 1907, pt. 1, p. 208.
    1908, pt. 1, p. 334.

15. **Chloride Cliff.** Au, Pb, Cu.
    15 miles S. Bullfrog, Nev., B. G. R. R.
    Paleozoic sediments.
    Replacements and veins.
    Ball, S. H., Notes on ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 72–73.
    ——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 161, 162, 173–175.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187–195.
    Top. sheet Furnace Creek.

16. **Darwin.** Au, Ag, Cu, Pb.
    24 miles SE. Keeler, S. P. R. R.
    Paleozoic sediments cut by monzonite.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 212–213.
    Min. Res. 1907, pt. 1, pp. 207–208.
    1908, pt. 1, p. 334.
    1909, pt. 1, p. 275.

17. **Daylight.** Ag, Pb (Au, Cu).
    15 miles SW. Bullfrog, Nev., B. G. R. R.
    Tertiary volcanics.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 176.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187–195.
    Top. sheet Furnace Creek.

18. **Deep Springs (Pine Mountain).** Ag, Pb (Au, Cu).
    15 miles E. Laws, S. P. R. R.
    Paleozoic sediments cut by granite.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.

19. **Echo Canyon (Schwaub).** Au.
    12 miles NW. Death Valley, T. & T. R. R.
    Paleozoic sediments.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 175.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187–195.
    Top. sheet Furnace Creek.

20. **Emigrant.** Au.
    75 miles NE. Brown, S. P. R. R.
    Paleozoic sediments and Tertiary volcanics.
    Veins.

20. **Emigrant**—Continued.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200–205.
    Top. sheet Ballarat.

21. **Furnace Creek (Greenwater).** Cu, Au, Ag.
    20 miles S. Death Valley, T. & T. R. R.
    Paleozoic sediments cut by granite.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 201.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187–195.
    Min. Res. 1907, pt. 1, p. 208.
    Top. sheet Greenwater.

22. **Goldbelt.** Cu, Au.
    30 miles E. Keeler, S. P. R. R.
    Paleozoic sediments cut by monzonite.
    Contact metamorphic, veins.
    Ball, S. H., Notes on ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 73.
    ——— A geologic reconnaissance of southwestern Nevada and eastern California: Bull. 308, 1907, p. 211.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200–205.
    Top. sheet Ballarat.

23. **Grapevine Canyon.** Au, Ag.
    20 miles NW. Bullfrog, Nev., B. G. R. R.
    Paleozoic sediments and Tertiary volcanics.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 176.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187–195.

24. **Harrisburg.** Cu, Au, Ag, Pb.
    70 miles NE. Brown, S. P. R. R.
    Paleozoic sediments cut by quartz monzonite.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 211.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200–205.
    Top. sheet Harrisburg.

25. **Independence (Paiute, Waucoba).** Ag, Pb, Au.
    10 miles NE. Citrus, S. P. R. R.
    Paleozoic sediments cut by granite.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.
    Min. Res. 1907, pt. 1, p. 208.
    Top. sheet Mount Whitney.

26. **Kearsarge.** Au, Ag.
    10 miles W. Citrus, S. P. R. R.
    Paleozoic sediments cut by granite.

INYO COUNTY—Continued.

26. **Kearsarge**—Continued.
    Veins.
    Top. sheet Mount Whitney.

27. **Kelley.** Au, Ag.
    20 miles NE. Brown, S. P. R. R.

28. **Lee.** Au, Ag.
    30 miles SSE. Keeler, S. P. R. R.
    Paleozoic sediments cut by granite.
    Veins and replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 212-213.
    Top. sheet Ballarat.

29. **Lees Camp.** Au, Ag.
    6 miles W. Leeland, T. & T. R. R.
    Paleozoic sediments.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 175.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187-195.
    Min. Res. 1907, pt. 1, p. 208.
    Top. sheet Lees Camp.

30. **Lone Pine.**
    4 miles W. Whitney, S. P. R. R.
    Top. sheet Mount Whitney.

31. **Lookout (Modoc).** Pb, Ag.
    45 miles NE. Brown, S. P. R. R.
    Paleozoic sediments, Tertiary volcanics.
    Replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 212-213.
    Top. sheet Ballarat.

32. **New Coso.** Pb, Ag (Cu, Au).
    30 miles NE. Brown, S. P. R. R.
    Paleozoic sediments, Tertiary volcanics.
    Replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 212-213.

33. **Panamint (Ballarat).** Ag, Pb (Cu, Sb).
    50 miles NE. Brown, S. P. R. R.
    Paleozoic sediments.
    Veins, replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200-205.
    Min. Res. 1883-84, p. 642.
    1907, pt. 1, p. 207.
    1908, pt. 1, p. 334.
    1909, pt. 1, p. 275.
    Top. sheet Ballarat.

34. **Poison Spring.** Au.
    16 miles W. Leeland, T. & T. R. R.
    Paleozoic sediments.
    Veins.
    Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 175.
    Top. sheet Furnace Creek.

INYO COUNTY—Continued.

35. **Russ.** Pb, Ag.
  15 miles NE. Whitney, S. P. R. R.
  Paleozoic sediments cut by granite.
  Replacements and veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.

36. **Saratoga (Tecopa Mountain).** Pb, Cu, Ag, Au, Zn.
  12 miles NE. Tecopa, T. & T. R. R.
  Paleozoic sediments, granite and Tertiary volcanics.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 195–200.
  Min. Res. 1907, pt. 1, pp. 207, 208.

37. **Sherwin.** Au.
  20 miles W. Bishop, S. P. R. R.
  Granite.
  Veins.

38. **Skidoo.** Au, Pb, Ag.
  75 miles NE. Brown, S. P. R. R.; 45 miles SW. Rhyolite, Nev., B. G. R. R.
  Granite cut by syenite, diorite, and monzonite.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200–205.
  Min. Res. 1907, pt. 1, p. 208.
  1908, pt. 1, p. 334.
  1909, pt. 1, p. 275.
  Top. sheet Ballarat.

39. **Swansea (Keeler, Kruger).** Pb, Ag.
  Keeler station S. P. R. R.
  Paleozoic sediments cut by granite.
  Veins and replacements.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.
  Min. Res. 1909, pt. 1, p. 275.

40. **Tibbets.** Au, Ag.
  16 miles N. Citrus, S. P. R. R.
  Paleozoic sediments cut by granite.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.
  Top. sheet Mount Whitney.

41. **Tinemaha (Fish Springs).** Au.
  10 miles S. Alvord, S. P. R. R.
  Paleozoic sediments cut by granite.
  Veins.
  Min. Res. 1907, pt. 1, p. 208.

42. **Tucki Mountain.** Au.
  80 miles NE. Brown, S. P. R. R.; 50 miles SW. Death Valley, T. & T. R. R.
  Paleozoic sediments cut by granite.
  Veins.
  Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 211.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200–205.
  Top. sheet Ballarat.

INYO COUNTY—Continued.

43. **Ubehebe.** Cu (Au, Ag).
    60 miles E. Laws, S. P. R. R.
    Paleozoic limestone cut by acidic intrusives.
    Contact metamorphic.
44. **Union.** Pb, Ag.
    12 miles SSE. Laws, S. P. R. R.
    Paleozoic sediments cut by granite.
    Replacements and veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 206–212.
45. **Wildrose.** Ag, Pb.
    70 miles NE. Brown, S. P. R. R.
    Paleozoic sediments cut by granite.
    Veins and replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 200–205.
    Top. sheet Ballarat.
46. **Willow.** Au, Ag.
    15 miles NW. Zabriskie, T. & T. R. R.
    Paleozoic sediments, Tertiary volcanics.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 187–195.

KERN COUNTY.

47. **Agua Caliente.** Au.
    20 miles E. Caliente, A. T. & S. F. R. R.
    Veins.
48. **Amalie (Paris).** Ag, Au, W, Pb.
    15 miles E. Caliente, A. T. & S. F. R. R.
    Limestone and schist.
    Veins.
    Min. Res. 1905, p. 177.
    1906, pp. 188, 525.
    1908, pt. 1, pp. 335, 336, 724.
49. **Big Dixie.** Au.
    15 miles NE. Cantil, S. P. R. R.
50. **Black Mountain.** Au, Mo.
    15 miles NW. Johannesburg, A. T. & S. F. R. R.
51. **Garlock.** Au.
    11 miles SW. Johannesburg, A. T. & S. F. R. R.
    Granite, schist.
    Veins.
    Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23–47.
52. **Goler.** Au. (Pl.)
    6 miles W. Searles, S. P. R. R.
    Wash gravels.
    Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23–47.
53. **Greenhorn Mountains.** Au.
    40 miles N. Caliente, A. T. & S. F. R. R.

KERN COUNTY—Continued.

54. **Green Mountain.** Au, Ag.
    48 miles NNE. Caliente, A. T. & S. F. R. R.
    Top. sheet Kernville.

55. **Havilah.** Au.
    25 miles N. Caliente, A. T. & S. F. R. R.
    Metamorphosed slates and limestones cut by granite.
    Veins.
    Min. Res. 1908, pt. 1, p. 336.

56. **Isabella.** Au, Ag.
    37 miles N. Caliente, A. T. & S. F. R. R.
    Min. Res. 1909, pt. 1, p. 276.
    Top. sheet Kernville.

57. **Kernville.** Au, Ag, Cu.
    42 miles N. Caliente, A. T. & S. F. R. R.
    Top. sheet Kernville.

58. **Keysville.** Au, Ag.
    31 miles N. Caliente, A. T. & S. F. R. R.

59. **Long Tom.** Au (Pb, Cu).
    15 miles ENE. Bakersfield, A. T. & S. F. R. R., S. P. R. R.

60. **Mohave.** Au, Ag.
    Mojave station, A. T. & S. F. R. R., S. P. R. R.
    Tertiary volcanics.
    Veins.
    Min. Res. 1905, p. 177.
    1906, p. 188.
    1907, pt. 1, p. 209.
    1908, pt. 1, p. 336.
    1909, pt. 1, p. 276.

61. **Piute Mountain.** Au.
    35 miles NNE. Caliente, A. T. & S. F. R. R.
    Min. Res. 1908, pt. 1, p. 336.
    1909, pt. 1, p. 276.
    Top. sheet Kernville.

62. **Rademacher.** Cu, Ag, Au.
    5 miles N. Searles, S. P. R. R.
    Granite and schist.
    Veins.
    Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23-47.

63. **Randsburg.** Au, Ag, W.
    1½ miles W. Johannesburg, A. T. & S. F. R. R.
    Schist and granite.
    Veins.
    Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23-47.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 216-218.
    Min. Res. 1905, pp. 177, 412.
    1906, pp. 189, 525.
    1907, pt. 1, pp. 209-210.
    1908, pt. 1, pp. 336, 723.
    1909, pt. 1, p. 276.
    Top. sheet Randsburg.

KERN COUNTY—Continued.

64. **Red Rock.** Au. (Pl.).
12 miles NNW. Cantil, S. P. R. R.
Wash gravels.

65. **Rosamond.** Au.
9 miles W. Rosamond, S. P. R. R.
Min. Res. 1905, p. 177.

66. **San Emigdio.** Au, Sb.
30 miles NE. Caliente, A. T. & S. F. R. R.
Min. Res. 1882, pp. 438–439.
1883–84, p. 641.
1885, p. 387.

67. **Searles.** Au, Cu.
Station S. P. R. R.

68. **Slate Range.** Au.
28 miles SSE. Portersville, S. P. R. R.
Veins.

69. **Summit.** Au. (Pl.)
6 miles N. Johannesburg, A. T. & S. F. R. R.
Wash gravels.
Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23–47.
Top. sheet Randsburg.

70. **Vaughn.** Au.
33 miles N. Caliente, A. T. & S. F. R. R.

71. **Woody.** Cu, Au.
34 miles NE. Martensdale, S. P. R. R.
Granodiorite, aplite.
Vein.

LOS ANGELES COUNTY.

72. **Arrastre Canyon (Newhall).** Au. (Pl.)
Station S. P. R. R.
Wash gravels.
Top. sheet Santa Susana.

73. **Azusa (Kern).** Au, Ag (Ni, Co).
10 miles N. San Dimas, A. T. & S. F. R. R., S. P. R. R.
Schist and greenstones.
Veins.
Top. sheet Pomona.

74. **Baldy Mountain.** Au.
22 miles SE. Palmdale, S. P. R. R.
Top. sheet Rock Creek.

75. **Cedar.** Au, Ag.
8 miles N. Acton, S. P. R. R.
Schist and greenstones.
Veins.

76. **Gleason Mountain.** Au, Ag (Cu).
15 miles S. Acton, S. P. R. R.
Granite and schist.
Veins.
Top. sheet Tujunga.

77. **Soledad (Acton).** Au. (D, Pl.)
Station S. P. R. R.
Granite and schist.

LOS ANGELES COUNTY—Continued.

77. **Soledad (Acton)**—Continued.
    Veins, stream gravels.
    Min. Res. 1907, pt. 1, p. 233.
    Top. sheet Tujunga.

78. **Tujunga.** Au, Ag.
    15 miles SSE. Acton, S. P. R. R.
    Granite and schist.
    Veins.
    Top. sheet Tujunga.

MADERA COUNTY.

79. **Coarse Gold.** Au. (D, Pl.)
    44 miles NE. Madera, S. P. R. R.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, pp. 684, 695.
    Min. Res. 1906, p. 190.
    1907, pt. 1, p. 234.
    1908, pt. 1, p. 359.

80. **Daulton.** Cu.
    Station S. P. R. R.
    Granite and schist.
    Veins.
    Min. Res. 1907, pt. 1, p. 234.

81. **Fine Gold.** Au. (D, Pl.)
    42 miles E. Madera, S. P. R. R.
    Veins and stream gravels.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, pp. 684, 695.

82. **Grub Gulch.** Au, W. (D, Pl.)
    14 miles NE. Raymond, S. P. R. R.
    Schist.
    Veins.
    Hess, F. L., Note on a tungsten-bearing vein near Raymond, Cal.: Bull. 340, 1908, p. 271.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 695.

83. **Hildreth.** Au, Ag.
    35 miles E. Madera, S. P. R. R.
    Granite and slate.
    Veins.

84. **Minarets (Mount Raymond).** Fe, Ag.
    90 miles NE. Friant, S. P. R. R.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 711.
    Top. sheet Mount Lyell.

85. **North Fork.** Au.
    45 miles ENE. Madera, S. P. R. R.
    Top. sheet Mount Lyell.

86. **Potter Ridge.** Au.
    10 miles NE. Madera, S. P. R. R.
    Granite and slate.
    Veins.

MONO COUNTY.

87. **Blind Spring.** Au, Ag, Cu, Pb.
    Benton station, S. P. R. R.
    Granite, limestone, and Tertiary volcanics.
    Veins.

88. **Bodie.** Au, Ag.
    46 miles WSW. Thorn, Nev., S. P. R. R.
    Tertiary volcanics.
    Veins.
    Min. Res. 1905, p. 178.
    1906, p. 190.
    1907, pt. 1, pp. 211-212.
    1908, pt. 1, p. 338.
    1909, pt. 1, p. 278.

89. **Castle Peak.** Ag.
    90 miles S. Minden, Nev., V. & T. R. R.

90. **Cloverpatch.** Ag, Au.
    20 miles SW. Benton, S. P. R. R.

91. **Dogtown Diggings.** Au. (Pl.)
    85 miles S. Minden, Nev., V. & T. R. R.

92. **Homer (Lundy).** Au, Ag.
    63 miles SW. Thorn, Nev., S. P. R. R.
    Granite.
    Veins.
    Min. Res. 1906, p. 190.
    1907, pt. 1, p. 212.
    1908, pt. 1, p. 338.
    1909, pt. 1, p. 278.

93. **Indian.** Au, Ag.
    20 miles W. Benton, S. P. R. R.

94. **Jordan.** Au, Cu.
    50 miles SW. Thorn, Nev., S. P. R. R.

95. Omitted.

96. **Keith.** Au.
    70 miles S. Minden, Nev., V. & T. R. R.; 66 miles S. Thorn, Nev., S. P. R. R.

97. **Lakes (Mammoth).** Au, Ag.
    50 miles SW. Benton, S. P. R. R.
    Granite and schist.
    Veins.
    Top. sheet Mount Lyell.

98. **Masonic.** Au, Ag.
    65 miles S. Minden, Nev., V. & T. R. R.
    Min. Res. 1906, p. 190.
    1907, pt. 1, p. 212.
    1908, pt. 1, p. 338.
    1909, pt. 1, p. 278.

99. **Patterson.** Au, Ag.
    65 miles S. Minden, Nev., V. & T. R. R.

100. **Tioga.** Au, Ag.
    75 miles SW. Thorn, Nev., S. P. R. R.
    Granite.
    Veins.
    Turner, H. W., Further contributions to the geology of the Sierra Nevada: Seventeenth Ann. Rept., pt. 1, 1896, p. 713.

MONO COUNTY—Continued.

101. **West Walker.** Au (Ag).
36 miles S. Minden, Nev., V. & T. R. R.

102. **White Peak.** Au, Cu.
Benton station, S. P. R. R.

MONTEREY COUNTY.

103. **Dutro.** Hg.
40 miles WSW. King City, S. P. R. R.

104. **Jolon.** Au. (Pl, D.)
21 miles S. King City, S. P. R. R.
Min. Res. 1909, pt. 1, p. 290.

105. **Los Burros.** Au. (Pl, D.)
43 miles W. King City, S. P. R. R.
Slates, serpentine, and limestone.
Veins.

106. **Table Mountain.** Hg.
30 miles ENE. San Miguel, S. P. R. R.

ORANGE COUNTY.

107. **Trabuco Canyon.** Pb, Zn, Au, Ag.
25 miles N. San Juan Capistrano, A. T. & S. F. R. R.
Clay, slate, and porphyry.
Veins.
Top. sheets Corona, Elsinore.

RIVERSIDE COUNTY.

108. **Chuckwalla.** Au.
50 miles ENE. Mecca, S. P. R. R.

109. **Corona.** Mo.
4 miles N. Corona, A. T. & S. F. R. R.
Granite.
Veins.
Hess, F. L., Some molybdenum deposits of Maine, Utah, and California: Bull. 340, 1908, pp. 238–239.

110. **Dos Palmas.** Au.
20 miles E. Mecca, S. P. R. R.

111. **Ironwood.** Au, Ag, Cu, Pb.
40 miles S. Randolph, A. T. & S. F. R. R.
Porphyry.
Veins.

112. **Lost Horse.** Au.
30 miles N. Indio, S. P. R. R.

113. **Menifee (Auld).** Au, Ag.
10 miles S. Winchester, A. T. & S. F. R. R.
Top. sheet Elsinore.

114. **Monte Negro (Eagle Mountain).** Au, Ag, Cu, Fe.
50 miles S. Amboy, A. T. & S. F. R. R.; 40 miles NE. Mecca, S. P. R. R.
Granite and metamorphosed sediments cut by granite porphyry.
Veins.
Harder, E. C., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229.

115. **Onward.** Au.
55 miles NE. Mecca, S. P. R. R.
Granite.
Veins.

RIVERSIDE COUNTY—Continued

116. **Perris.** Au.
Station A. T. & S. F. R. R.
Slate and granite.
Veins.
Top. sheet Elsinore.

117. **Pinyon Mountain.** Au.
15 miles N. Indio, S. P. R. R.

117a. **Temescal Mountains (San Jacinto).** Sn.
10 miles SE. Corona, A. T. & S. F. R. R.
Metamorphosed sediments cut by granite.
Veins.
Hess, F. L., and Graton, L. C., The occurrence and distribution of tin: Bull. 260, 1905, pp. 165–166.
Min. Res. 1882, pp. 434–435.
1883–84, pp. 614–615.
1891, p. 161.
1894 (Sixteenth Ann. Rept., pt. 3), pp. 536–538.

SAN BENITO COUNTY.

118. **Central Benito.** Hg.
26 miles SSE. Tres Pinos, S. P. R. R.
Mesozoic sediments.
Stockworks.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 380.
Min. Res. 1909, pt. 1, p. 553.

119. **New Idria.** Hg.
64 miles SE. Tres Pinos, S. P. R. R.
Cretaceous shales and sandstones.
Stockworks, veins, and disseminations.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 291–309; Eighth Ann. Rept., 1889, p. 977.
Melville, W. H., and Lindgren, W., Contributions to the mineralogy of the Pacific coast: Bull. 61, 1890, p. 21.
Min. Res. 1882, pp. 394–398.
1883–84, p. 492.
1887, pp. 119–120.
1908, pt. 1, pp. 686–689.
1909, pt. 1, p. 553.

120. **Stayton (McLeod, Panoche).** Hg, Sb.
15 miles NE. Hollister, S. P. R. R.
Metamorphosed slates.
Stockworks.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 379–381.
Min. Res. 1883–84, p. 642.
1885, p. 387.
1909, pt. 1, p. 553.

SAN BERNARDINO COUNTY.

121. **Alvord.** Au.
35 miles NE. Daggett, A. T. & S. F. R. R., S. P. L. A. & S. L. R. R.
Limestone cut by porphyry.
Veins.

SAN BERNARDINO COUNTY—Continued.

122. **Arondo (Slate Range).** Au, Ag.
50 miles NE. Johannesburg, A. T. & S. F. R. R.
Tertiary volcanics.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, p. 213.

123. **Arrowhead.** Au.
20 miles SE. Kelso, S. P. L. A. & S. L. R. R.; 20 miles NNW. Dabney, A. T. & S. F. R. R.
Granite.
Veins.

124. **Atolia.** W, Au.
Station A. T. & S. F. R. R.
Granite and schist.
Veins.
Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23–47.
Min. Res. 1906, p. 525.
1907, pt. 1, p. 712.
1908, pt. 1, p. 723.
1909, pt. 1, pp. 577–578.
Top. sheet Randsburg.

125. **Blackhawk (Silver Reef).** Au, Ag.
40 miles ESE. Victorville, S. P. L. A. & S. L. R. R.
Sediments and granodiorite.
Veins and replacements.
Top. sheet San Gorgonio.

126. **Brightwood (Providence Mountains).** Ag, Pb, Cu.
15 miles NE. Kelso, S. P. L. A. & S. L. R. R.
Granite and schist cut by diorite and porphyry.
Veins.

127. **Bullion (Standard).** Cu, Ag, Pb, Au.
14 miles N. Cima, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by granite.
Contact metamorphic.
Min. Res. 1908, pt. 1, p. 724.
1909, pt. 1, p. 282.

128. **Calico (Daggett).** Ag.
10 miles N. Daggett, A. T. & S. F. R. R., S. P. L. A. & S. L. R. R.
Rhyolite.
Replacements and veins.
Min. Res. 1907, pt. 1, p. 221.
1908, pt. 1, p. 346.

129. **Cave Canyon.** Fe.
1 mile N. Scott, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by granite.
Contact metamorphic.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229.
Leith, C. K., Iron ores of western United States and British Columbia: Bull. 285, 1905, p. 198.

SAN BERNARDINO COUNTY—Continued.

130. **Cima.** Ag, Au.
Cima station, S. P. L. A. & S. L. R. R.
Granite.
Veins.
Min. Res. 1906, p. 194.
1907, pt. 1, p. 221.
1908, pt. 1, p. 346.

131. **Cottonwood.** Au, Ag.
5 miles N. Judson, S. P. L. A. & S. L. R. R.

132. **Crackerjack.** Au.
10 miles W. Silver Lake, T. & T. R. R.

133. **Dry Lake.** Cu.
18 miles NE. Crucero, T. & T. R. R., S. P. L. A. & S. L. R. R.

134. **Garlic Spring.** Fe.
25 miles N. Barstow, A. T. & S. F. R. R., S. P. L. A. & S. L. R. R.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229.

135. **Grapevine.** Au, Ag, Pb.
10 miles N. Barstow, A. T. & S. F. R. R., S. P. L. A. & S. L. R. R.
Veins.

136. **Hart.** Au.
3 miles S. Hitt, B. & S. R. R.
Rhyolite.
Veins.
Min. Res. 1907, pt. 1, p. 221.

137. **Helen.** Au, Ag.
Judson station, S. P. L. A. & S. L. R. R.

138. **Holcomb.** Au, Ag.
20 miles NE. Patton, A. T. & S. F. R. R.
Top. sheet San Gorgonio.

139. **Ibex.** Au.
15 miles NW. Needles, A. T. & S. F. R. R.

140. **Iron Mountain.** Fe.
20 miles N. Crucero, S. P. L. A. & S. L. R. R., T. & T. R. R.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229, map.

141. **Ivanpah (Copper World).** Cu, Au, Ag, Pb.
Station A. T. & S. F. R. R.
Paleozoic sediments cut by granite.
Veins and contact metamorphic.
Min. Res. 1898 (Twentieth Ann. Rept., pt. 6), p. 185.
1907, pt. 1, pp. 221, 712.

142. **Kane Springs.** Cu, Au, Ag.
20 miles SE. Daggett, A. T. & S. F. R. R., S. P. L. A. & S. L. R. R.
Granite.
Veins.

143. **Kelso.** Fe.
10 miles S. Kelso, S. P. L. A. & S. L. R. R.

144. **Kewanee.** Au.
6 miles W. Leastalk, S. P. L. A. & S. L. R. R.
Veins.
Min. Res. 1907, pt. 1, p. 221.

SAN BERNARDINO COUNTY—Continued.

145. **Kingston Range.** Fe.
25 miles SE. Tecopa, T. & T. R. R.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229. (Shows the location.)

146. **Knob Peak.** Au, Cu.
35 miles SE. Tecopa, T. & T. R. R.

147. **Lava Beds (Newberry).** Au, Ag, Cu.
12 miles W. Ludlow, A. T. & S. F. R. R., T. & T. R. R.
Granodiorite.
Veins.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229.

148. **Monument Peak (Whipple Mountain).** Cu, Au.
14 miles N. Vidal, A. T. & S. F. R. R.
Pre-Cambrian gneiss, schist; diorite capped by Tertiary volcanics.
Veins.
Bancroft, H., Reconnaissance of the ore deposits in northern Yuma County, Ariz.: Bull. 451, 1911, pp. 68–73.
Top. sheet Parker.

149. **Morongo (Lone Valley?).** Au, Ag.
15 miles N. Palm Springs, S. P. R. R.
Limestone and slate.
Vein.
Top. sheet San Gorgonio.

150. **Needles.** Au, Cu.
15 miles W. Mellen, A. T. & S. F. R. R.
Veins.

151. **New York (Manvel, Barnwell).** Au, Ag, Cu (Pb, Zn, W).
Barnwell station, A. T. & S. F. R. R.
Granite and schist.
Veins.
Min. Res. 1906, p. 525.
1907, pt. 1, p. 221.
1908, pt. 1, pp. 346, 724.

152. **Ord.** Au, Ag, Cu.
30 miles S. Daggett, A. T. & S. F. R. R., S. P. L. A. & S. L. R. R.
Granite.
Veins.

153. **Oro Grande.** Au, Ag, Pb.
10 miles W. Hesperia, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by diorite and quartz porphyry.
Replacements and veins.
Top. sheet Hesperia.

154. **Owl Holes.** Fe.
70 miles NW. Silver Lake, T. & T. R. R.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, p. 229. (Shows the location.)

155. **San Antonio.** Au.
15 miles W. Cajon, A. T. & S. F. R. R.
Top. sheet San Antonio.

156. **Shadow Mountains.** Cu, Au, Ag, Pb, W.
20 miles NW. Cima, S. P. L. A. & S. L. R. R.
Min. Res. 1908, pt. 1, p. 724.

SAN BERNARDINO COUNTY—Continued.

157. **Signal (Vontrigger).** Cu, Au, W.
8 miles E. Vontrigger, A. T. & S. F. R. R.
Min. Res. 1908, pt. 1, p. 724.

158. **Silver Mountain.** Au, Ag, Cu.
20 miles E. Victorville, S. P. L. A. & S. L. R. R.
Granite, limestone.
Veins.

159. **Spangler.** Au, Ag, Cu.
24 miles NE. Johannesburg, A. T. & S. F. R. R.

160. **Stedman.** Cu, Au, Ag.
15 miles S. Ludlow, A. T. & S. F. R. R., T. & T. R. R.
Min. Res. 1905, p. 180.
1906, p. 194.
1907, pt. 1, p. 220.

161. **Stringer.** Au, W (Pb, Zn, Cu).
Atolia station, A. T. & S. F. R. R.
Schist and granite.
Veins.
Hess, F. L., Gold mining in the Randsburg quadrangle, California: Bull. 430, 1910, pp. 23–47.
Min. Res. 1906, p. 525.
1907, pt. 1, p. 712.
Top. sheet Stringer.

162. Omitted.

163. **Trojan (Providence).** Au, Cu.
20 miles W. Blake, A. T. & S. F. R. R.
Veins.

164. **Twentynine Palms.** Au, Ag.
40 miles SSW. Amboy, A. T. & S. F. R. R.
Veins.

165. **Vanderbilt.** Au, Cu.
Barnwell station, A. T. & S. F. R. R.
Granite and limestone.
Veins.

166. Omitted.

167. **Virginia Dale (Monte Negro).** Au, Ag, Cu, Fe.
45 miles S. Amboy, A. T. & S. F. R. R.; 40 miles NE. Mecca, S. P. R. R.
Sediments cut by granite, diorite, and syenite.
Veins.
Harder, E. C., and Rich, J. L., The Iron Age iron-ore deposit near Dale, San Bernardino County, Cal.: Bull. 430, 1910, pp. 228–239.
Min. Res. 1907, pt. 1, p. 221.
1908, pt. 1, p. 346.
1909, pt. 1, p. 282.

168. Omitted.

SAN DIEGO COUNTY.

169. **Banner.** Au.
30 miles NE. Lakeside, S. D. & C. R. R.
Schist and granite.
Veins.
Min. Res. 1909, pt. 1, p. 290.
Top. sheet Ramona.

SAN DIEGO COUNTY—Continued.

170. **Cuyamaca.** Au.
25 miles ENE. Lakeside, S. D. & C. R. R.
Schist and granite (?).
Veins.
Min. Res. 1907, pt. 1, p. 234.
Top. sheet Cuyamaca.

171. **Dulzura.** Au.
24 miles SE. Spring Valley, S. D. & C. R. R.
Metamorphosed sediments cut by acidic and basic dikes.
Veins.
Min. Res. 1907, pt. 1, p. 234.
Top. sheet Cuyamaca.

172. **Escondido.** Au, Ag.
Station A. T. & S. F. R. R.
Granite.
Veins.
Min. Res. 1907, pt. 1, p. 234.
1909, pt. 1, p. 290.
Top. sheet Escondido.

173. **Foster (San Vicente).** Au.
Foster station, S. D. & C. R. R.
Top. sheets Ramona, Cuyamaca.

174. **Julian.** Au.
25 miles NE. Foster, S. D. & C. R. R.
Slates, schist, and granite.
Veins.
Min. Res. 1905, p. 181.
1907, pt. 1, p. 234.
1909, pt. 1, p. 290.
Top. sheet Ramona.

175. **Mesa Grande.** Au.
25 miles NNE. Foster, S. D. & C. R. R.
Top. sheet Ramona.

176. **Pine Valley.** Au, Ag.
30 miles E. Lakeside, S. D. & C. R. R.
Granite and schist.
Veins.

177. **Rice.** Au.
40 miles ENE. Foster, S. D. & C. R. R.

178. **San Mateo (Pinacate).** Cu.
25 miles E. San Juan Capistrano, A. T. & S. F. R. R.
Schists, gneiss, granite.
Veins.
Top. sheets San Luis Rey, Capistrano.

SAN LUIS OBISPO COUNTY.

179. **Adelaida (Klau).** Hg.
16 miles W. Paso Robles, S. P. R. R.
Mesozoic slates and sandstones.
Stockworks.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 381-382.
Min. Res. 1908, pt. 1, pp. 689-690.
1909, pt. 1, p. 553.

SAN LUIS OBISPO COUNTY—Continued.

180. **La Panza.** Au. (Pl.)
 50 miles SE. Santa Margarita, S. P. R. R.
 Min. Res. 1907, pt. 1, p. 234.

181. **Oceanic (Santa Rosa).** Hg.
 25 miles NW. San Luis Obispo, S. P. R. R.
 Mesozoic sandstone.
 Impregnations.
 Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 381-382.
 Min. Res. 1887, pp. 119-121.
 1908, pt. 1, p. 689.
 1909, pt. 1, p. 553.

182. **Ocean View (Pine Peak).** Hg.
 44 miles NW. San Luis Obispo, S. P. R. R.
 Metamorphosed slates.
 Stockworks.
 Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 381-382.

183. **Perfumo Canyon.** Fe, Cr.
 5 miles WSW. San Luis Obispo, S. P. R. R.
 Jurassic sediments.
 Lenses.
 Harder, E. C., Iron ores of western and central California: Bull. 430, 1910, pp. 220-223.
 Min. Res. 1882, p. 428.
 1883-84, pp. 570-571.
 1885, pp. 357-358.
 1886, p. 176.

184. **Rinconada (Santa Margarita).** Hg.
 Station S. P. R. R.
 Metamorphosed slates and serpentine.
 Disseminations.
 Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 381-382.
 Top. sheet San Luis Obispo.

185. **San Luis Obispo (Santa Lucia).** Fe, Cr.
 20 miles NW. San Luis Obispo, S. P. R. R.
 Metamorphosed slates and serpentine.
 Lenses.
 Harder, E. C., Some chromite deposits in western and central California: Bull. 430, 1910, pp. 168-173.
 Min. Res. 1883-84, pp. 570-571
 1908, pt. 1, p. 767.
 Top. sheet San Luis Obispo.
 Folio 101, 1904.

SANTA BARBARA COUNTY.

186. **Los Prietos.** Hg.
 5 miles N. Santa Barbara, S. P. R. R.
 Serpentine.
 Stockworks.
 Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 382.
 Top. sheet Santa Barbara special.

TULARE COUNTY.

187. **Bald Mountain.** Au, Cu.
    37 miles SE. Plano, S. P. R. R.
    Serpentine and limestone.
    Vein (?).
188. **Finger Rock.** Au.
    30 miles NE. Exeter, S. P. R. R.
    Top. sheet Tehipite.
189. **Globe.** Au.
    14 miles E. Portersville, S. P. R. R.
    Top. sheet Kaweah.
190. **Mineral King.** Au, Cu, Sb.
    48 miles ENE. Exeter, S. P. R. R.
    Metamorphosed sediments and granite.
    Contact metamorphic.
    Min. Res. 1883-84, p. 642.
    Top. sheet Kaweah.
191. **Portersville.** Cu.
    Station S. P. R. R.
192. **White River.** Au, Cu.
    23 miles SE. Plano, S. P. R. R.

VENTURA COUNTY.

193. **Frazier Mountain.** Au.
    46 miles SSE. Maricopa, S. P. R. R.
    Gneiss, slate, and granite.
    Vein.
    Top. sheet Tejon.
194. **Snowy Creek (Piru Creek).** Au.
    35 miles N. Piru, S. P. R. R.
    Granite.
    Vein.
    Top. sheet Tejon.

COLORADO.

In 35 counties of Colorado there are 132 mining districts, as sho by Plate VI. This is not accurate in that in Gilpin and Clear Cre counties and some other localities the mining districts are small a several have been combined under one symbol and number. In 5 the 132 districts the predominant metal is unknown, in 1 zinc is t most important product, in 1 iron, in 8 rare metals, in 60 gold, in silver, in 20 copper, and in 16 lead.

Distribution of the predominant metals produced in the mining districts of Colorado.

County.	Gold.	Silver.	Copper.	Lead.	Zinc.	Iron.	Rare metals.	Unknown.	Tot
Boulder	6						1		
Chaffee	3	2	2	3		1			
Clear Creek	4	3		1					
Conejos	1								
Costilla	2								
Custer		1		1					
Dolores		2							
Eagle	2	1							
Fremont	1		3		1		1		
Gilpin	3								
Grand	2		1					2	
Gunnison	6	3							
Hinsdale	1	1		1					
Huerfano	1		1						
Jefferson	1		1						
Lake	1			1				1	
La Plata	2								
Larimer and Jackson			3					1	
Mesa			1						
Mineral		1							
Montezuma	1								
Montrose			1				3		
Ouray	3		1						
Park	5	2		1					
Pitkin		1		3					
Rio Blanco							1		
Rio Grande	3								
Routt and Moffat	2		5	1			1	1	
Saguache	1	1		1					
San Juan	2								
San Miguel	3	1					1		
Summit	3	2		1					
Teller	1		1						
	60	21	20	16	1	1	8	5	1

MINING DISTRICTS IN COLORADO.

[See Pl. VI. Additional references may be found in Mineral Resources for 1910 and 1911.]

BOULDER COUNTY.

1. **Central.** Au, Ag.
   7 miles NW. Boulder, C. & S. R. R., U. P. R. R.
   Pre-Cambrian complex and basic dikes.
   Veins.
   Min. Res. 1905, p. 194.
   1906, p. 208.
   1907, pt. 1, p. 245.
   1908, pt. 1, p. 371.
   1909, pt. 1, p. 303.

LIST OF MINING DISTRICTS

BOULDER COUNTY

1. Central
2. Gold Hill
3. Grand Island (Caribou)
4. Magnolia
5. Nederland
6. Sugarloaf
7. Ward

CHAFFEE COUNTY

8. Alpine
9. Chalk Creek
10. Cleora
11. Cottonwood
12. Granite
13. La Plata (Winfield)

LAKE COUNTY

68. California (Leadville)
69. Harrington (Tennessee Pass)
70. Twin Lakes

LA PLATA COUNTY

71. California (Oro Fino)
72. Needle Mountains (Florida)

LARIMER AND JACKSON COUNTIES

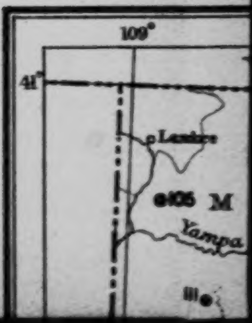
73. Empire (Howes Gulch)
74. Manhattan
75. Pearl
76. Steamboat Rock (Grey Rock)

MESA COUNTY

77. Unaweep

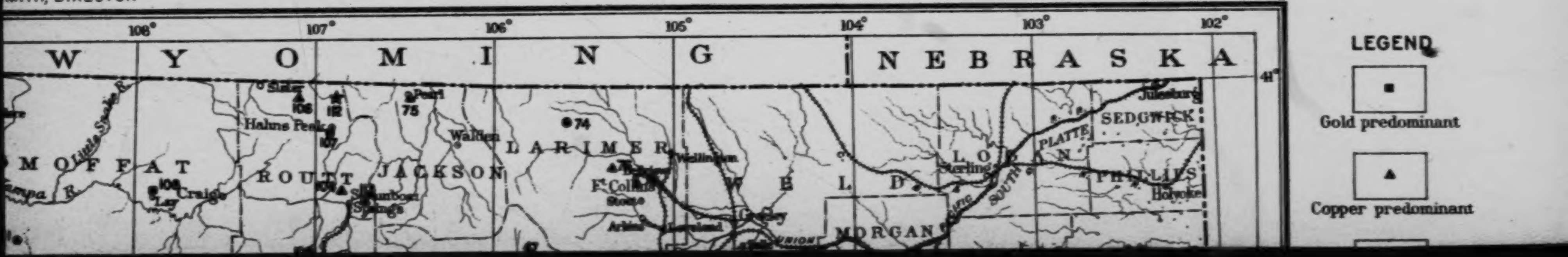
MINERAL COUNTY

U. S. GEOLOGICAL
GEORGE OTIS SMITH,



CAL SURVEY
MITH, DIRECTOR

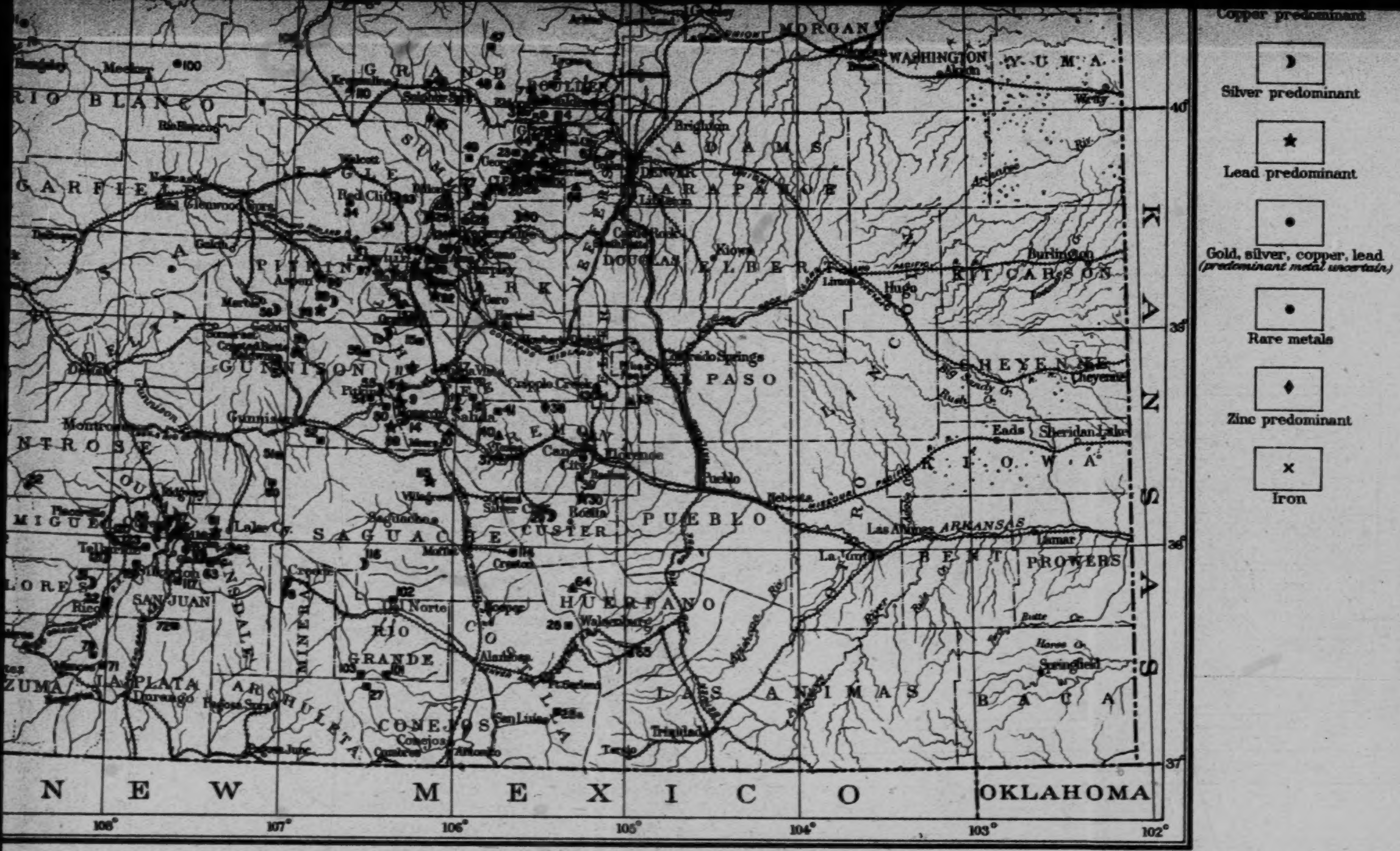
BULLETIN 507 PLATE VI


108°
107°
106°
105°
104°
103°
102°
41°
W Y O M I N G
N E B R A S K A
Slater
106
112
Pearl
75
Hahns Peak
107
Walden
74
MOFFAT
ROUTT
JACKSON
LARIMER
Wellington
Ft Collins
Stove
Craig
Lay
108
Steamboat Springs
Little Snake R.
Yampa R.
WELD
LOGAN
Sterling
SEDGWICK
Julesburg
PLATTE
SOUTH
PHILLIPS
Holyoke
MORGAN
Greeley
Loveland
UNION
LEGEND
Gold predominant
Copper predominant

12. Granite
13. La Plata (Winfield)
14. Monarch-Garfield
15. Riverside
16. Sedalia
17. South Arkansas
18. Turret
CLEAR CREEK COUNTY
19. Argentine
20. Griffith (Georgetown, Silver Plume, Queens, etc.)
21. Idaho Springs (crat
22. Jackson (Corral, Cascade, Dome-
23. Lincoln (Alice, Yankee)
24. Montana (Lawson, Dumont)
25. Trail
26. Upper Union (Empire)
CONEJOS COUNTY
27. Ute (Platoro)
COSTILLA COUNTY
28. Grayback (Russell)
28a. Plomo
CUSTER COUNTY
29. Hardscrabble (Silver Cliff)
30. Spaulding
DOLORES COUNTY
31. Lone Cone (Dunton)
32. Pioneer (Rico)
EAGLE COUNTY
33. Battle Mountain (Red Cliff, Gilman)
34. Fulford
35. Holy Cross (Eagle River)
FREMONT COUNTY
36. Canon City
37. Cotopaxi
38. Currant Creek (Micanite)
39. Greenhorn (Grape Creek)
40. Red Gulch
41. Whitehorn (Manes, Calumet)
GILPIN COUNTY
42. Central City (Central, Nevada, Gregory, Russell, Quartz Hill)
43. Independence (Perigo)
44. Pine (Kingston, Apex)
GRAND COUNTY
45. Blue Ridge
46. Corral Creek
47. Grand Lake (Wolverine)
48. Harmon
49. La Plata
GUNNISON COUNTY
50. Box Canyon
51. Cebolla (Vulcan, Domingo)
52. Cochetopa
53. Elk Mountain (Ruby)
54. Gold Brick
55. Quartz Creek
56. Rock Creek
57. Ruby
58. Tincup (Pieplant)
59. Tomichi (Whitepine)
60. White Earth
HINSDALE COUNTY
61. Galena
62. Lake (San Cristobal)
63. Park (Sherman)
HUERFANO COUNTY
64. Huerfano (Malachite)
65. La Veta
JACKSON COUNTY (See Larimer)
JEFFERSON COUNTY
66. Evergreen (Malachite)
67. Golden

77. Unaweep
MINERAL COUNTY
78. Sunnyside (Creede)
MOFFAT COUNTY (See Routt)
MONTEZUMA COUNTY
79. East Mancos
MONTROSE COUNTY
80. Hydraulic
81. La Sal
82. Naturita (Vixen)
83. Roc Creek
OURAY COUNTY
84. Imogene Basin (Camp Bird)
85. Red Mountain
86. Sneffels
87. Uncompahgre
PARK COUNTY
88. Buckskin
89. Consolidated Montgomery
90. Halls Gulch
91. Hartsel
92. Horseshoe
93. Mosquito
94. Sacramento
95. Tarryall
PITKIN COUNTY
96. Columbia (Ashcroft)
97. Fryingpan
98. Lincoln
99. Roaring Fork (Aspen)
RIO BLANCO COUNTY
100. Coal Creek
RIO GRANDE COUNTY
101. Decatur
102. Embargo
103. Summitville
ROUTT AND MOFFAT COUNTIES
104. Copper Ridge
105. Douglas Mountain
106. Elkhorn (Three Forks, Slater)
107. Hahns Peak (Columbine)
108. Lay (Jackrabbit)
109. Oak Creek (Red Gorge)
110. Rock Creek (Gore Ridge)
111. Skull Creek (Blue Mountain)
112. Slavonia (Springs
113. Spring Creek (Steamboat
SAGUACHE COUNTY
114. Baca Grant (Crestone)
115. Blake (Kerber Creek)
116. Crystal Hill
SAN JUAN COUNTY
117. Animas
118. Eureka
SAN MIGUEL COUNTY
119. Iron Spring (Ophir)
120. Lower San Miguel (Placerville, Sawpit, Newmire)
121. Mount Wilson
122. Snyderville (Cedar)
123. Upper San Miguel (Telluride)
SUMMIT COUNTY
124. Breckenridge (Bevan, Union, (Minnesota
125. Frisco
126. Montezuma (Snake River)
127. Peru
128. Swan River
129. Tenmile (Kokomo)
TELLER COUNTY
130. Cripple Creek
131. East Beaver

111
White R.
Range
40°
UTAH
RIO
GA
Mack
Grand Junction
39°
77
Dolores
83
80
MONT
82
38°
SAN MI
122
DOLOR
Dolores
Cortez
MONTEZUM
37°
109°


Copper predominant
Silver predominant
Lead predominant
Gold, silver, copper, lead
(predominant metal uncertain)
Rare metals
Zinc predominant
Iron
RIO BLANCO
GRAND
BOULDER
MORGAN
WASHINGTON
YUMA
ADAMS
ARAPAHOE
GARFIELD
EAGLE
DOUGLAS
ELBERT
KIT CARSON
PITKIN
GUNNISON
EL PASO
CHEYENNE
MONTROSE
FREMONT
KIOWA
SAN MIGUEL
SAGUACHE
CUSTER
PUEBLO
BENT
PROWERS
DOLORES
SAN JUAN
HINSDALE
MINERAL
RIO GRANDE
HUERFANO
MONTEZUMA
LA PLATA
ARCHULETA
CONEJOS
COSTILLA
LAS ANIMAS
BACA
KANSAS
NEW MEXICO
OKLAHOMA
Denver
Colorado Springs
Pueblo
Cripple Creek
Leadville
Aspen
Gunnison
Durango
Trinidad
Walsenburg
Alamosa
La Junta
Las Animas
Lamar
Burlington
Limon
Salida
Telluride
Silverton
Ouray
Rico
Creede
Del Norte
Glenwood Spgs.
Meeker
Brighton
Akron
Wray
Hugo
Eads
Springfield
ARKANSAS
40°
39°
38°
37°
108°
107°
106°
105°
104°
103°
102°
JULIUS BIEN CO. LITH. N.Y.

MAP OF COLORADO, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

BOULDER COUNTY—Continued.

. **Gold Hill.** Au, Ag, Pb, Cu.
6 miles NNW. Crisman, D. B. & W. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
Min. Res. 1905, p. 194.
1906, p. 208.
1907, pt. 1, p. 245.
1908, pt. 1, p. 371.
1909, pt. 1, p. 303.

3. **Grand Island (Caribou).** Au, Ag, Pb (Mn, Cu).
2 miles W. Cardinal, D. B. & W. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
Min. Res. 1905, p. 195.
1906, p. 208.
1907, pt. 1, p. 245.
1908, pt. 1, p. 371.
1909, pt. 1, p. 304.
Top. sheet Central City.

4. **Magnolia.** Au, Ag, W.
18 miles SW. Boulder, C. & S. R. R., U. P. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
George, R. D., and Crawford, R. D., The main tungsten area of Boulder County, Colo.: First Ann. Rept. Colorado Geol. Survey, 1909, pp. 7–105.
Min. Res. 1906, p. 208.
1907, pt. 1, pp. 245, 712.
1908, pt. 1, pp. 371, 722.
1909, pt. 1, p. 304.
Top. sheet Central City.

5. **Nederland.** W.
2½ miles E. Cardinal, D. B. & W. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
George, R. D., and Crawford, R. D., The main tungsten area of Boulder County, Colo.: First Ann. Rept. Colorado Geol. Survey, 1909, pp. 7–105.
Min. Res. 1904, pp. 330–331.
1905, p. 411.
1907, pt. 1, p. 712.
1908, pt. 1, p. 722.
1909, pt. 1, pp. 578–579.
Top. sheet Central City.

6. **Sugarloaf.** Au, Ag, W, Pb, Cu.
Station D. B. & W. R. R.
Pre-Cambrian complex cut by acidic and basic dikes
Veins.
Min. Res. 1904, p. 330.
1905, pp. 195, 411.
1906, p. 208.
1907, pt. 1, pp. 245, 246, 712.
1908, pt. 1, p. 372.
1909, pt. 1, pp. 304, 579.

BOULDER COUNTY—Continued.

7. **Ward.** Au, Ag, Cu, Pb.
Station D. B. & W. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
Min. Res. 1905, p. 195.
1906, p. 209.
1907, pt. 1, p. 246.
1908, pt. 1, p. 372.
1909, pt. 1, p. 304.

CHAFFEE COUNTY.

8. **Alpine.** Pb, Ag, Au, Cu.
Station C. & S. R. R.
Pre-Cambrian complex.
Veins.
Spurr, J. E., and Garrey, G. H., Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, p. 106.

9. **Chalk Creek.** Pb, Ag, Au, Zn.
St. Elmo station, C. & S. R. R.
Min. Res. 1906, p. 209.
1907, pt. 1, p. 247.
1908, pt. 1, p. 373.
1909, pt. 1, p. 305.

10. **Cleora.** Cu, Au, Ag, Zn, Pb.
4 miles S. Salida, D. & R. G. R. R.
Pre-Cambrian complex.
Veins.
Lindgren, W., Notes on copper deposits in Chaffee, Fremont, and Jefferson counties, Colo.: Bull. 340, 1908, pp. 157-174.
Min. Res. 1906, p. 209.
1908, pt. 1, p. 373.
1909, pt. 1, p. 305.

11. **Cottonwood.** Pb, Ag.
10 miles W. Buena Vista, D. & R. G. R. R., C. M. R. R.
Pre-Cambrian complex (?).
Veins (?).
Min. Res. 1905, p. 195.

12. **Granite.** Au, Ag, Pb. (D, Pl.)
Station D. & R. G. R. R., C. M. R. R.
Pre-Cambrian complex cut by dikes.
Veins.
Min. Res. 1908, pt. 1, p. 373.
1909, pt. 1, p. 305.
Top. sheet Leadville.

13. **La Plata (Winfield).** Ag, Au, Cu, Pb.
15 miles WSW. Granite, D. & R. G. R. R., C. M. R. R.
Min. Res. 1905, p. 195.
1906, p. 209.
1907, pt. 1, p. 247.
1908, pt. 1, p. 373.
1909, pt. 1, p. 305.

CHAFFEE COUNTY—Continued.

14. **Monarch-Garfield.** Ag, Au, Cu, Pb, Zn.
19 miles W. Salida, D. & R. G. R. R.
Pre-Cambrian granite and Paleozoic sediments cut by quartz monzonite.
Veins and replacements.
Crawford, R. D., A preliminary report on the geology of the Monarch mining district, Chaffee County, Colo.: Bull. Colorado Geol. Survey No. 1, 1910.
Min. Res. 1885, p. 256.
1887, p. 105.
1888, p. 87.
1905, p. 195.
1906, p. 210.
1907, pt. 1, p. 247.
1908, pt. 1, p. 373.
1909, pt. 1, p. 305.

15. **Riverside.** Au, Ag, Pb, Cu.
15 miles NNW. Buena Vista, D. & R. G. R. R., C. M. R. R.
Min. Res. 1906, p. 210.
1907, pt. 1, p. 247.
1908, pt. 1, p. 373.
1909, pt. 1, p. 305.

16. **Sedalia.** Cu, Zn.
6 miles ENE. Salida, D. & R. G. R. R.
Pre-Cambrian schists and gneiss.
Lenses.
Lindgren, W., Notes on copper deposits in Chaffee, Fremont, and Jefferson counties, Colo.: Bull. 340, 1908, pp. 157–174.
Min. Res. 1883–84, p. 341.
1907, pt. 1, pp. 247–248.
1908, pt. 1, p. 373.

17. **South Arkansas.** Fe.
19 miles NNE. Salida, D. & R. G. R. R.
Min. Res. 1883–84, p. 282.
1887, p. 53.

18. **Turret.** Au, Ag, Cu.
14 miles NNE. Salida, D. & R. G. R. R.
Pre-Cambrian complex.
Veins and lenses.
Lindgren, W., Notes on copper deposits in Chaffee, Fremont, and Jefferson counties, Colo.: Bull. 340, 1908, pp. 157–174.
Min. Res. 1905, p. 196.
1906, p. 210.
1907, pt. 1, pp. 247, 248, 602.
1908, pt. 1, p. 373.
1909, pt. 1, p. 305.

CLEAR CREEK COUNTY.

19. **Argentine.** Au, Pb, Ag, Cu, Zn.
Waldorf station, Ar. C. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Patton, H. B., The Montezuma mining district of Summit County, Colo.: First Ann. Rept. Colorado Geol. Survey, 1909, pp. 105–145.
Spurr, J. E., and Garrey, G. H., Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, pp. 69, 104, 136, 246, 267, 270, 271.

CLEAR CREEK COUNTY—Continued.

19. **Argentine**—Continued.
Min. Res. 1885, p. 256.
1905, pp. 197–198.
1906, p. 212.
1907, pt. 1, p. 249.
1908, pt. 1, p. 375.
1909, pt. 1, p. 307.
Top. sheet Georgetown.

20. **Georgetown (Griffith, Silver Plume, Queens).** Ag, Zn, Pb, Au, Cu.
Silver Plume station, C. & S. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Spurr, J. E., and Garrey, G. H., Preliminary report on the ore deposits of the Georgetown mining district, Colorado: Bull. 260, 1905, pp. 99–120.
——— Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, pp. 278–290.
Min. Res. 1882, pp. 310–311.
1885, p. 256.
1905, p. 197.
1906, pp. 211–212.
1907, pt. 1, p. 249.
1908, pt. 1, pp. 375–376.
1909, pt. 1, pp. 307–308.

21. **Idaho Springs (Virginia).** Au, Ag, Pb, Cu, Zn.
Idaho Springs station, C. & S. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Garrey, G. H., The Idaho Springs mining district, Colorado: Bull. 285, 1906, pp. 35–40.
Spurr, J. E., and Garrey, G. H., Preliminary report on the ore deposits of the Georgetown mining district, Colorado: Bull. 260, 1905, pp. 99–120.
——— Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, pp. 311–382.
Min. Res. 1883–84, p. 341.
1885, p. 256.
1905, pp. 196–197.
1906, p. 211.
1907, pt. 1, p. 250.
1908, pt. 1, pp. 276–377.
1909, pt. 1, pp. 308–309.
Top. sheets Georgetown, Idaho Springs special.

22. **Jackson (Corral, Cascade, Democrat).** Ag, Au, Pb, Cu.
Idaho Springs station, C. & S. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Spurr, J. E., and Garrey, G. H., Preliminary report on the ore deposits of the Georgetown mining district, Colorado: Bull. 260, 1905, pp. 99–120.
——— Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, pp. 311–382.
Min. Res. 1885, p. 256.
1906, p. 212.
1907, pt. 1, p. 250.
1908, pt. 1, pp. 376–377.
1909, pt. 1, p. 309.
Top. sheet Georgetown.

CLEAR CREEK COUNTY—Continued.

23. **Lincoln (Alice, Yankee).** Au, Ag, Cu, Pb. (D, Pl.)
    12 miles NW. Idaho Springs, C. & S. R. R.
    Pre-Cambrian complex cut by acidic and basic dikes.
    Veins, stream and terrace gravels.
    Min. Res. 1905, p. 197.
    1908, pt. 1, p. 377.
    1909, pt. 1, p. 307.
    Top. sheet Central City.
24. **Montana (Lawson, Dumont).** Ag, Au, Cu, Pb, Zn.
    Lawson and Dumont stations, C. & S. R. R.
    Pre-Cambrian complex cut by acidic dikes.
    Veins.
    Spurr, J. E., and Garrey, G. H., Preliminary report on the ore deposits of the Georgetown mining district, Colorado: Bull. 260, 1905, pp. 99–120.
    ——— Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908.
    Min. Res. 1885, p. 256.
    1905, p. 197.
    1906, p. 213.
    1907, pt. 1, pp. 250–251.
    1908, pt. 1, p. 377.
    1909, pt. 1, p. 309.
    Top. sheet Central City.
25. **Trail.** Pb, Au, Ag, Cu, Zn.
    6 miles WSW. Idaho Springs, C. & S. R. R.
    Pre-Cambrian complex cut by acidic dikes.
    Veins.
    Spurr, J. E., and Garrey, G. H., Preliminary report on the ore deposits of the Georgetown mining district, Colorado: Bull. 260, 1905, pp. 99–120.
    ——— Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, pp. 311–340.
    Min. Res. 1883, p. 341.
    1885, p. 256.
    1905, p. 196.
    1906, p. 212.
    1907, pt. 1, p. 251.
    1908, pt. 1, p. 377.
    1909, pt. 1, p. 309.
    Top. sheet Georgetown.
26. **Upper Union (Empire).** Au, Ag, Cu, Pb.
    3 miles NW. Empire, C. & S. R. R.
    Pre-Cambrian complex cut by acidic dikes.
    Veins.
    Spurr, J. E., and Garrey, G. H., Economic geology of the Georgetown quadrangle, Colorado: P. P. 63, 1908, pp. 383–410.
    Min. Res. 1906, pp. 212–213.
    1907, pt. 1, p. 251.
    1908, pt. 1, p. 377.
    1909, pt. 1, p. 307.
    Top. sheet Central City.

CONEJOS COUNTY.

27. **Ute (Platoro).** Au, Ag.
    45 miles SW. Monte Vista, D. & R. G. R. R.
    Tertiary volcanics.
    Veins.

CONEJOS COUNTY—Continued.

27. Ute (Platoro)—Continued.
  Min. Res. 1905, p. 198.
    1906, p. 213.
    1907, pt. 1, p. 251.

COSTILLA COUNTY.

28. Grayback (Russell). Au. (D, Pl.)
  3 miles N. Russell station, D. & R. G. R. R.
  Pre-Cambrian complex and Paleozoic sediments cut by monzonite.
  Veins and replacements, stream gravels.
  Patton, H. B., and others, Geology of the Grayback mining district, Costilla County, Colo.: Bull. Colorado Geol. Survey No. 2, 1910.
  Min. Res. 1906, p. 213.
    1907, pt. 1, p. 251.
  Top. sheet Huerfano Park.

28a. Plomo. Au. (Pl.)
  17 miles S. Fort Garland, D. & R. G. R. R.
  Pre-Cambrian gneiss cut by quartz porphyry.
  Replacements.

CUSTER COUNTY.

29. Hardscrabble (Rosita, Silver Cliff). Ag, Au, Pb, Cu, Zn.
  Westcliff station, D. & R. G. R. R.
  Pre-Cambrian complex, Tertiary volcanics.
  Veins and pipes.
  Cross, W., Geology of Silver Cliff and the Rosita Hills, Colorado: Seventeenth Ann. Rept., pt. 2, 1896, pp. 263-403.
  Emmons, S. F., The mines of Custer County, Colo.: Seventeenth Ann. Rept., pt. 2, 1896, pp. 405-472.
  Min. Res. 1883-84, p. 549.
    1885, p. 256.
    1905, p. 198.
    1906, p. 213.
    1907, pt. 1, pp. 251-252.
    1908, pt. 1, p. 378.
    1909, pt. 1, p. 309.
  Top. sheet Canon City.

30. Spaulding. Pb, Au, Ag.
  14 miles SW. Florence, D. & R. G. R. R.
  Min. Res. 1905, p. 198.
    1906, p. 213.
    1907, pt. 1, pp. 251-252.
    1908, pt. 1, p. 378.
  Top. sheet Canon City.

DOLORES COUNTY.

31. Lone Cone (Dunton). Ag, Au, Pb, Zn, Cu.
  16½ miles NW. Rico, R. G. S. R. R.
  Min. Res. 1905, p. 199.
    1906, p. 214.
    1907, pt. 1, p. 252.
    1908, pt. 1, p. 378.
    1909, pt. 1, p. 310.

32. Pioneer (Rico). Ag, Cu, Pb, Zn, Au.
  Station R. G. S. R. R.
  Pre-Cambrian and Paleozoic sediments domed by monzonite porphyry.

DOLORES COUNTY—Continued.

32. **Pioneer (Rico)**—Continued.
    Veins, replacements, and stockworks.
    Cross, W., and Spencer, A. C., Geology of the Rico Mountains, Colorado: Twenty-first Ann. Rept., pt. 2, 1900, pp. 7–165.
    Ransome, F. L., The ore deposits of the Rico Mountains, Colorado: Twenty-second Ann. Rept., pt. 2, 1901, pp. 229–297.
    Min. Res. 1886, p. 145.
    1905, p. 199.
    1906, pp. 214, 476.
    1907, pt. 1, p. 252.
    1908, pt. 1, pp. 378, 379.
    1909, pt. 1, p. 310.
    Top. sheets Rico, Rico special.
    Folio 130, 1905.

EAGLE COUNTY.

33. **Battle Mountain (Red Cliff, Gilman).** Ag, Zn, Au, Cu, Pb.
    Red Cliff station, D. & R. G. R. R.
    Pre-Cambrian granite, Paleozoic sediments cut by acidic porphyry.
    Veins and replacements.
    Min. Res. 1882, pp. 310–311.
    1883–84, p. 422.
    1885, p. 255.
    1886, p. 144.
    1905, p. 199.
    1906, p. 215.
    1907, pt. 1, p. 253.
    1908, pt. 1, p. 378.
    1909, pt. 1, p. 311.
34. **Fulford.** Au, Cu.
    18 miles SE. Eagle, D. & R. G. R. R.
    Min. Res. 1905, p. 199.
    1906, p. 215.
    1907, pt. 1, p. 253.
    1908, pt. 1, p. 379.
35. **Holy Cross (Eagle River).** Au, Ag. (D, Pl.)
    18 miles SW. Red Cliff, D. & R. G. R. R.
    Min. Res. 1906, p. 215.
    1907, pt. 1, p. 253.
    1908, pt. 1, p. 379.
    1909, pt. 1, p. 311.
    Top. sheet Leadville.

FREMONT COUNTY.

36. **Canon City.** Cu, W.
    Station D. & R. G. R. R.
    Pre-Cambrian complex.
    Veins.
    Min. Res. 1906, p. 216.
    Top. sheet Canon City.
37. **Cotopaxi.** Cu, Zn, Pb.
    Station D. & R. G. R. R.
    Pre-Cambrian complex.

FREMONT COUNTY—Continued.

37. **Cotopaxi**—Continued.
    Lenses.
    Lindgren, W., Notes on copper in Chaffee, Fremont, and Jefferson counties, Colo.: Bull. 340, 1908, pp. 166–167.
38. **Currant Creek (Micanite).** Zn (Au, Ag).
    26 miles S. Howbert, C. M. R. R.
    Min. Res. 1906, p. 215.
39. **Greenhorn (Grape Creek).** Ni, Co, Fe.
    15 miles SW. Canon City, 3 miles S. Radiant, D. & R. G. R. R.
    Min. Res. 1882, p. 404.
    1883–84, pp. 281–282.
    1887, p. 53.
    1906, p. 216.
    Top. sheet Canon City.
40. **Red Gulch.** Cu, Ag.
    9 miles N. Cotopaxi, D. & R. G. R. R.
    Paleozoic sediments, "red beds."
    Disseminated.
    Lindgren, W., Notes on copper in Chaffee, Fremont, and Jefferson counties, Colo.: Bull. 340, 1908, pp. 170–174.
    Min. Res. 1907, pt. 1, pp. 253–254.
    1908, pt. 1, p. 380.
41. **Whitehorn (Manoa, Calumet).** Au, Ag (Cu).
    26 miles NE. Salida, D. & R. G. R. R.

GILPIN COUNTY.

42. **Central City (Central, Nevada, Gregory, Russell, Quartz Mountain).** Au, Ag, Cu, Pb.
    Station C. & S. R. R.
    Pre-Cambrian complex cut by acidic dikes.
    Veins.
    Min. Res. 1882, pp. 227–228.
    1883–84, p. 341.
    1885, p. 256.
    1904, p. 344.
    1905, p. 200.
    1906, pp. 216–217.
    1907, pt. 1, pp. 255–256.
    1908, pt. 1, pp. 380–383, 747–748.
    1909, pt. 1, pp. 312–314.
    Top. sheet Central City.
43. **Independence (Perigo).** Au, Ag, Cu, Pb.
    6 miles N. Central City, C. & S. R. R.; 5 miles SSW. Rollinsville, D. N. W. & P. R. R.
    Pre-Cambrian complex cut by acidic dikes.
    Veins.
    Min. Res. 1883–84, p. 341.
    1905, p. 200.
    1906, p. 217.
    1907, pt. 1, p. 255.
    1908, pt. 1, pp. 383, 389.
    1909, pt. 1, p. 314.
    Top. sheet Central City.

GILPIN COUNTY—Continued.

44. **Pine (Kingston, Apex).** Au, Pb, Cu, Ag.
7 miles NW. Central City, C. & S. R. R.; 5 miles S. Tolland, D. N. W. & P. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Min. Res. 1883-84, p. 341.
1905, p. 200.
1906, p. 217.
1907, pt. 1, p. 256.
1908, pt. 1, pp. 383-384.
1909, pt. 1, p. 314.
Top. sheet Central City.

GRAND COUNTY.

45. **Blue Ridge.**
11 miles S. Parshall, D. N. W. & P. R. R.

46. **Corral Creek.**
Parshall station, D. N. W. & P. R. R.

47. **Grand Lake (Wolverine).** Au, Cu, Ag, Pb.
16 miles NNE. Granby, D. N. W. & P. R. R.
Pre-Cambrian complex.
Veins.
Min. Res. 1905, p. 201.

48. **Harmon.** Cu.
12 miles E. Granby, D. N. W. & P. R. R.
Pre-Cambrian.
Veins.
Min. Res. 1905, p. 201.
1906, p. 218.

49. **La Plata.** Au, Ag, Cu.
24 miles SSE. Granby, D. N. W. & P. R. R.
Pre-Cambrian complex.
Veins.
Min. Res. 1906, p. 218.

GUNNISON COUNTY.

50. **Box Canyon.** Au, Ag (Cu).
7 miles S. Pitkin, C. & S. R. R.
Pre-Cambrian schists cut by diorite.
Lenses.
Hill, J. M., Notes on the economic geology of southeastern Gunnison County, Colo.: Bull. 380, 1909, pp. 21-40.
Min. Res. 1907, pt. 1, p. 257.
1908, pt. 1, p. 384.
1909, pt. 1, p. 315.

51. **Cebolla (Vulcan, Domingo).** Au, Ag, Fe.
18 miles S. Iola, D. & R. G. R. R.
Pre-Cambrian schists, Cretaceous sediments.
Veins.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 2[illegible]; Bull. 427, 1910, p. 150.
Leith, C. K., Iron ores of the western United States and British Columbia: Bull. 285, 1906, p. 197.
Min. Res. 1882, pp. 144-147.
1883-84, p. 283.
1907, pt. 1, pp. 105, 257.
1908, pt. 1, p. 111.

GUNNISON COUNTY—Continued.

52 **Cochetopa.** Au, Ag.
5 miles S. Parlin, D. & R. G. R. R.
Pre-Cambrian granite cut by acidic and basic dikes.
Veins.
Hill, J. M., Notes on the economic geology of southeastern Gunnison County, Colo.: Bull. 380, 1909, pp. 21–40.
Min. Res. 1906, p. 218.
1907, pt. 1, p. 257.
1908, pt. 1, p. 384.

53. **Elk Mountain (Ruby).** Pb, Au, Ag.
Crested Butte station, D. & R. G. R. R.
Cretaceous sediments cut by acidic and basic dikes.
Veins.
Harder, E. C., The Taylor Peak and White Pine iron-ore deposits, Colorado: Bull. 380, 1909, pp. 188–198.
Min. Res. 1906, p. 218.
1907, pt. 1, p. 257.
1908, pt. 1, p. 385.
1909, pt. 1, p. 315.
Top. sheet Crested Butte. Folio 9, 1894.

54. **Gold Brick.** Au, Ag, Pb.
3 miles N. Ohio, C. & S. R. R.
Pre-Cambrian granite schists.
Veins.
Hill, J. M., Notes on the economic geology of southeastern Gunnison County, Colo.: Bull. 380, 1909, pp. 21–40.
Min. Res. 1905, p. 202.
1906, p. 219.
1907, pt. 1, p. 257.
1908, pt. 1, p. 385.
1909, pt. 1, p. 315.

55. **Quartz Creek.** Ag, Au, Pb.
3 miles N. Pitkin, C. & S. R. R.
Pre-Cambrian complex, Paleozoic sediments cut by acidic dikes.
Veins and replacements.
Hill, J. M., Notes on the economic geology of southeastern Gunnison County, Colo.: Bull. 380, 1909, pp. 21–40.
Min. Res. 1905, p. 202.
1906, p. 219.
1907, pt. 1, p. 257.
1908, pt. 1, p. 385.
1909, pt. 1, p. 315.

56. **Rock Creek.** Ag, Pb, Cu, Zn, Au.
Marble station, C. R. & S. J. R. R.
Min. Res. 1905, p. 201.
1906, pp. 218–219.
1907, pt. 1, p. 257.
1908, pt. 1, p. 385.
Top. sheet Anthracite.
Folio 9, 1894.

57. **Ruby.** Ag.
Floresta station, D. & R. G. R. R.
Cretaceous sediments cut by acidic and basic dikes.
Veins.

GUNNISON COUNTY—Continued.

57. **Ruby**—Continued.
Min. Res. 1905, p. 201.
1908, pt. 1, p. 385.
Top. sheet Anthracite.
Folio 9, 1894.

58. **Tincup (Pieplant).** Au, Ag, Pb (Cu).
37 miles SSW. Buena Vista, C. & S. R. R., C. M. R. R., D. & R. G. R. R.
Pre-Cambrian complex, Paleozoic sediments cut by acidic porphyry.
Veins and replacements.
Hill, J. M., Notes on the economic geology of southeastern Gunnison County, Colo.: Bull. 380, 1909, pp. 21–40.
Min. Res. 1905, pp. 201–202.
1906, p. 219.
1907, pt. 1, pp. 257, 258.
1908, pt. 1, p. 385.
1909, pt. 1, p. 315.

59. **Tomichi (Whitepine).** Pb, Ag, Zn, Cu, Au, Fe.
12 miles NNE. Sargents, D. & R. G. R. R.
Pre-Cambrian granite, Paleozoic sediments cut by acidic dikes.
Veins and replacements.
Harder, E. C., The Taylor Peak and Whitepine iron-ore deposits, Colorado: Bull. 380, 1909, pp. 188–198.
Hill, J. M., Notes on the economic geology of southeastern Gunnison County, Colo.: Bull. 380, 1909, pp. 21–40.
Leith, C. K., Iron ores of the western United States and British Columbia: Bull. 285, 1905, pp. 196–198.
Min. Res. 1885, p. 256.
1887, p. 28.
1905, p. 202.
1906, p. 219.
1907, pt. 1, p. 258.
1908, pt. 1, p. 385.
1909, pt. 1, p. 315.

60. **White Earth.** Au.
18 miles S. Iola, D. & R. G. R. R.

HINSDALE COUNTY.

61. **Galena.** Pb, Ag, Cu, Au.
5 miles W. Lake City, D. & R. G. R. R.
Tertiary volcanics.
Veins.
Irving, J. D., Ore deposits in the vicinity of Lake City, Colo.: Bull. 260, 1905, pp. 78–84.
Irving, J. D., and Bancroft, H., Geology and ore deposits near Lake City, Colo.: Bull. 478, 1911, pp. 81–99.
Min. Res. 1905, p. 202.
1906, p. 220.
1907, pt. 1, pp. 258–259.
1908, pt. 1, p. 386.
1909, pt. 1, p. 316.
Top. sheet Lake.

62. **Lake (San Cristobal).** Ag, Au, Pb, Cu, Zn.
6 miles S. Lake City, D. & R. G. R. R.
Tertiary volcanics.

HINSDALE COUNTY—Continued.

62. **Lake (San Cristobal)**—Continued.
  Veins.
  Irving, J. D., Ore deposits in the vicinity of Lake City, Colo.: Bull. 260, 1905, pp. 78–84.
  Irving, J. D., and Bancroft, H., Geology and ore deposits near Lake City, Colo.: Bull. 478, 1911, pp. 99–116
  Min. Res. 1905, p. 202.
    1906, p. 220.
    1907, pt. 1, p. 259.
    1908, pt. 1, p. 386.
    1909, pt. 1, p. 316.
  Top. sheet Lake.

63. **Park (Sherman).** Au, Ag.
  22 miles SW. Lake City, D. & R. G. R. R.
  Tertiary volcanics.
  Veins.
  Irving, J. D., Ore deposits in the vicinity of Lake City, Colo.: Bull. 260, 1905, pp. 78–84.
  Larsen, E. S., The economic geology of Carson Camp, Hinsdale County, Colo.: Bull. 470, 1911, pp. 30–38.
  Woolsey, L. H., Lake Fork extension of the Silverton mining area, Colorado: Bull. 315, 1907, pp. 26–30.
  Min. Res. 1905, p. 202.
  Top. sheet San Cristobal.

HUERFANO COUNTY.

64. **Huerfano (Malachite).** Cu, Ag.
  32 miles WNW. Walsenburg, D. & R. G. R. R., C. & S. R. R.
  Paleozoic sediments, "Red Beds."
  Disseminated.
  Min. Res. 1909, pt. 1, p. 316.
  Top. sheet Huerfano Park.

65. **La Veta.** Au, Ag.
  Station D. & R. G. R. R.
  Tertiary volcanics, acidic and basic dikes.
  Veins.
  Top. sheets Walsenburg, Spanish Peaks.
  Folios 68, 1900; 71, 1901.

JACKSON COUNTY. (See Larimer.)

JEFFERSON COUNTY.

66. **Evergreen (Malachite).** Cu, Ag, Au, Ni.
  11 miles W. Mount Morrison, C. & S. R. R.
  Pre-Cambrian complex cut by basic dikes.
  Veins.
  Lindgren, W., Notes on copper in Chaffee, Fremont, and Jefferson counties, Colo.: Bull. 340, 1908, pp. 167–179.
  Min. Res. 1905, pp. 202–203.
    1906, p. 220.
    1907, pt. 1, p. 259.
    1909, pt. 1, p. 316.
  Top. sheet Denver.

67. **Golden.** Au. (Pl.)
  Station C. & S. R. R.
  Stream gravels.

JEFFERSON COUNTY—Continued.

67. **Golden**—Continued.
Min. Res. 1905, p. 203.
Top. sheet Denver.

LAKE COUNTY.

68. **California (Leadville).** Pb, Ag, Au, Zn, Cu, Fe, Mn.
Leadville station, D. & R. G. R. R.
Pre-Cambrian complex, Paleozoic sediments cut by acidic intrusives.
Replacements and veins.
Emmons, S. F., Geology and mining industry of Leadville, Colo.: M. XII, 1895.
Emmons, S. F., and Irving, J. D., The Downtown district of Leadville, Colo.: Bull. 320, 1907.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 273; Bull. 427, 1910, pp. 137–143.
Min. Res. 1882, pp. 310–311.
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1885, pp. 250–255, 348.
1886, p. 144.
1887, p. 105.
1888, pp. 53, 87.
1894 (Sixteenth Ann. Rept., pt. 3), pp. 407–410.
1904, p. 276.
1905, pp. 203–204.
1906, pp. 221–223, 475, 517.
1907, pt. 1, pp. 105, 259–261, 601.
1908, pt. 1, pp. 152, 386–389.
1909, pt. 1, pp. 317–319.
Top. sheets Leadville, Leadville special.

69. **Harrington (Tennessee Pass).**
Tennessee Pass station, D. & R. G. R. R.
Top. sheet Leadville.

70. **Twin Lakes.** Au, Ag, Pb. (D, Pl.)
9 miles NW. Granite, D. & R. G. R. R., C. M. R. R.
Pre-Cambrian complex.
Veins, glacial gravels.
Top. sheet Leadville.

LA PLATA COUNTY.

71. **California (Oro Fino).** Au, Ag, Pb, Cu.
14 miles NW. Durango, D. & R. G. R. R.
"Red Beds" cut by diorite or monzonite porphyry.
Veins.
Emmons, W. H., The Neglected mine and near-by properties, Durango quadrangle, Colorado: Bull. 260, 1905, pp. 121–127.
Min. Res. 1905, p. 205.
1906, p. 224.
1907, pt. 1, p. 262.
1908, pt. 1, p. 389.
Top. sheets Durango and La Plata.
Folio 60, 1899.

72. **Needle Mountains (Florida).** Au, Ag, Cu (Pb).
25 miles ENE. Tacoma, D. & R. G. R. R.
Pre-Cambrian complex cut by granite.
Veins.

LA PLATA COUNTY—Continued.

72. **Needle Mountains (Florida)**—Continued
Min. Res. 1905, p. 205.
1906, p. 224.
1908, pt. 1, p. 389.
Top. sheet Needle Mountains.
Folio 131, 1905.

LARIMER AND JACKSON COUNTIES.

73. **Empire (Howes Gulch).** Cu, Au.
8 miles W. Fort Collins, C. & S. R. R.
Pre-Cambrian complex.
Veins.

74. **Manhattan.**
45 miles NW. Fort Collins, C. & S. R. R.

75. **Pearl.** Cu (Au, Ag).
33 miles SE. Riverside, Wyo., S. & E. R. R.
Pre-Cambrian complex.
Veins.
Spencer, A. C., Reconnaissance examination of the copper deposits at Pearl, Colo.: Bull. 213, 1903, pp. 163–169.
Min. Res. 1906, p. 224.

76. **Steamboat Rock (Gray Rock).** Cu, Au.
NW. Fort Collins, C. & S. R. R.
Pre-Cambrian complex.
Veins.

MESA COUNTY.

77. **Unaweep.** Cu, Au, Ag.
25 miles SSW. Grand Junction, D. & R. G. R. R., C. M. R. R.
Pre-Cambrian schists and Paleozoic and Cretaceous sediments.
Disseminated.
Emmons, S. F., The copper in the red beds of the Colorado Plateau region: Bull. 260, 1905, p. 227.

MINERAL COUNTY.

78. **Sunnyside (Creede).** Ag, Pb, Au, Zn.
Station D. & R. G. R. R.
Tertiary volcanics.
Veins.
Emmons, W. H., and Larsen, E. S., Preliminary report on the geology and ore deposits of Creede, Colo.: Bull. 530, 1912.
Min. Res. 1905, p. 205.
1906, pp. 224–225.
1907, pt. 1, pp. 262–263.
1908, pt. 1, p. 390.
1909, pt. 1, p. 320.

MOFFAT COUNTY. (See Routt.)

MONTEZUMA COUNTY.

79. **East Mancos.** Au, Ag.
12 miles NE. Mancos, R. G. S. R. R.
"Red Beds" cut by diorite and monzonite.
Veins.
Min. Res. 1907, pt. 1, p. 263.
Top. sheet La Plata.
Folio 60, 1899.

MONTROSE COUNTY.

80. **Hydraulic.** V, U.
    74 miles WNW. Placerville, R. G. S. R. R.
    Jurassic sediments.
    Disseminated.
    Boutwell, J. M., Vanadium and uranium in Utah: Bull. 260. 1905, pp. 202–203.
    Min. Res. 1908, pt. 1, p. 748.
81. **La Sal.** Cu, Ag, V, U.
    76 miles W. Placerville, D. & R. G. R. R.
    Jurassic sediments.
    Veins and disseminations.
    Boutwell, J. M., Vanadium and uranium in Utah: Bull. 260, 1905, pp. 202–203.
    Emmons, W. H., The Cashin mine, Montrose County, Colo.: Bull. 285, 1906, pp. 125–128.
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    Min. Res. 1900, p. 261.
    1907, pt. 1, p. 264.
    1908, pt. 1, pp. 741, 748.
82. **Naturita (Vixen).** V, U.
    43 miles WNW. Placerville, R. G. S. R. R.
    Jurassic sediments.
    Disseminations.
    Boutwell, J. M., Vanadium and uranium in Utah: Bull. 260, 1905, p. 203.
    Min. Res. 1908, pt. 1, p. 748.
83. **Roc Creek.** V, U.
    80 miles WNW. Placerville, R. G. S. R. R.
    Jurassic sediments.
    Disseminations.
    Boutwell, J. M., Vanadium and uranium in Utah: Bull. 260, 1905, p. 203.
    Hillebrand, W. F., and Ransome, F. L., On carnotite and associated vanadiferous minerals in western Colorado: Bull. 262, 1905, p. 16.
    Min. Res. 1900, p. 261.
    1908, pt. 1, pp. 741, 748.

OURAY COUNTY.

84. **Imogene Basin (Camp Bird).** Au, Ag.
    8 miles SW. Ouray, D. & R. G. R. R.
    Tertiary volcanics.
    Veins.
    Ransome, F. L., A report on the economic geology of the Silverton quadrangle, Colorado: Bull. 182, 1901, pp. 1–265.
    Min. Res. 1905, p. 206.
    1906, p. 226.
    1907, pt. 1, p. 264.
    1908, pt. 1, p. 391.
    1909, pt. 1, p. 322.
    Top. sheet Silverton.
    Folio 120, 1905.
85. **Red Mountain.** Cu, Ag, Au, Pb.
    Station S. R. R.
    Tertiary volcanics.
    Veins.

OURAY COUNTY—Continued.

85. **Red Mountain**—Continued.
  Ransome, F. L., A report on the economic geology of the Silverton quadrangle, Colorado: Bull. 182, 1901, pp. 1-265.
  Min. Res. 1905, pp. 206-207.
    1906, p. 227.
    1907, pt. 1, p. 265.
    1908, pt. 1, pp. 391-392.
    1909, pt. 1, p. 322.
  Top. sheet Silverton.
  Folio 120, 1905.

86. **Sneffels.** Au, Ag, Pb, Cu.
  8 miles W. Ouray, D. & R. G. R. R
  Tertiary volcanics.
  Veins.
  Irving, J. D., Ore deposits of the Ouray district, Colorado: Bull. 260, 1905, pp. 50-77.
  Min. Res. 1905, p. 206.
    1906, p. 226.
    1907, pt. 1, p. 265.
    1908, pt. 1, p. 391.
    1909, pt. 1, p. 322.
  Top. sheet Ouray.
  Folio 153, 1907.

87. **Uncompahgre.** Au, Ag, Pb, Cu, Zn.
  Ouray station, D. & R. G. R. R.
  Paleozoic sediments and Tertiary volcanics.
  Veins and replacements.
  Irving, J. D., Ore deposits of the Ouray district, Colorado: Bull. 260, 1905, pp. 50-77.
  Min. Res. 1905, p. 206.
    1906, p. 227.
    1907, pt. 1, pp. 265-266.
    1908, pt. 1, p. 392.
    1909, pt. 1, p. 322.
  Top. sheet Ouray.
  Folio 153, 1907.

PARK COUNTY.

88. **Buckskin.** Au, Ag, Cu, Pb, Zn.
  6 miles NW. Alma, C. & S. R. R.
  Pre-Cambrian complex and Paleozoic sediments.
  Veins.
  Min. Res. 1905, p. 207.
    1906, p. 228.
    1907, pt. 1, p. 266.
    1908, pt. 1, pp. 392-393
    1909, pt. 1, p. 323.
  Top. sheet Leadville.

89. **Consolidated-Montgomery.** Au, Ag, Pb, Cu.
  6 miles N. Alma, C. & S. R. R.
  Pre-Cambrian complex.
  Veins.
  Min. Res. 1906, p. 228.
    1907, pt. 1, pp. 266-267.
    1908, pt. 1, p. 393.

PARK COUNTY—Continued.

89. **Consolidated-Montgomery**—Continued.
Min. Res. 1909, pt. 1, p. 323.
Top. sheet Leadville.

90. **Halls Gulch.** Ag (Au).
5 miles N. Grant, C. & S. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Min. Res. 1900, p. 228.
1907, pt. 1, p. 267.
1908, pt. 1, p. 393.

91. **Hartsel.** Au.
Station C. M. R. R.

92. **Horseshoe.** Pb, Ag, Au, Cu, Zn.
7 miles W. Garo, C. & S. R. R.
Pre-Cambrian complex, Paleozoic sediments.
Veins and replacements.
Min. Res. 1906, p. 228.
1907, pt. 1, p. 267.
1908, pt. 1, p. 393.
Top. sheet Leadville.

93. **Mosquito.** Au, Ag, Pb. (D, Pl.)
6 miles W. Alma, C. & S. R. R.
Paleozoic sediments.
Veins and glacial gravels.
Min. Res. 1905, p. 207.
1906, p. 228.
1907, pt. 1, p. 267.
1908, pt. 1, p. 393.
1909, pt. 1, p. 323.
Top. sheet Leadville.

94. **Sacramento.** Ag, Au, Pb (Cu).
8 miles NW. Garo, C. & S. R. R.
Pre-Cambrian complex.
Veins.
Min. Res. 1909, pt. 1, p. 323
Top. sheet Leadville.

95. **Tarryall.** Au, Ag. (D, Pl.)
Como station, C. & S. R. R.
Paleozoic and Cretaceous sediments cut by monzonite.
Veins and glacial gravels.
Min. Res. 1906, p. 228.
1907, pt. 1, p. 267.
1908, pt. 1, p. 393.
1909, pt. 1, p. 323.

PITKIN COUNTY.

96. **Columbia (Ashcroft).** Pb, Ag, Cu, Fe.
12 miles S. Aspen, D. & R. G. R. R., C. M. R. R.
Cretaceous sediments cut by acidic and basic dikes.
Veins.
Leith, C. K., Iron ores in western United States and British Columbia: Bull. 285, 1906, pp. 196-198.
Min. Res. 1887, p. 28.
1888, p. 33.
1906, p. 230.

PITKIN COUNTY—Continued.

96. **Columbia (Ashcroft)—Continued.**
Min. Res. 1907, pt. 1, p. 269.
1908, pt. 1, p. 394.
1909, pt. 1, p. 324.
Top. sheet Aspen.

97. **Frying Pan.** Pb, Au, Ag, Cu.
Nast station, C. M. R. R.
Pre-Cambrian granite; Paleozoic sediments cut by acidic and basic dikes.
Veins and replacements.

98. **Lincoln.** Ag, Pb, Au.
15 miles SSE. Aspen, C. M. R. R., D. & R. G. R. R.
Min. Res. 1905, p. 208.
1906, p. 230.
1907, pt. 1, pp. 268-269.
1908, pt. 1, p. 294.
1909, pt. 1, p. 324.

99. **Roaring Fork (Aspen).** Pb, Ag, Zn, Cu.
Aspen station, D. & R. G. R. R., C. M. R. R.
Paleozoic sediments cut by dikes.
Veins and replacements.
Spurr, J. E., Geology of the Aspen mining district, Colorado: M. XXXI, 1898.
Min. Res. 1883-84, p. 422.
1885, p. 256.
1886, p. 145.
1887, pp. 105-107.
1888, pp. 87-88.
1905, p. 208.
1906, pp. 229-230.
1907, pt. 1, p. 268.
1908, pt. 1, p. 294.
1909, pt. 1, p. 324.
Top. sheets Aspen, Aspen special.

RIO BLANCO COUNTY.

100. **Coal Creek.** V, U.
50 miles N. Rifle, D. & R. G. R. R.
Jurassic sediments.
Disseminated.
Gale, H. S., Carnotite in Rio Blanco County, Colo.: Bull. 315, 1907, pp. 110-117.
Min. Res. 1908, pt. 1, pp. 741, 748.

RIO GRANDE COUNTY.

101. **Decatur.** Au, Ag.
33 miles SW. Monte Vista, D. & R. G. R. R.

102. **Embargo.** Au, Ag, Pb, Cu.
Del Norte station, D. & R. G. R. R.
Min. Res. 1908, pt. 1, p. 395.

103. **Summitville.** Au, Ag.
28 miles SW. Del Norte, D. & R. G. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1905, p. 196.
1906, p. 213.

ROUTT AND MOFFAT COUNTIES.

104. **Copper Ridge.** Cu, Au.
    9 miles NW. Steamboat Springs, D. N. W. & P. R. R.
105. **Douglas Mountain.**
    40 miles NE. Dragoon, Utah, U. R. R.
106. **Elkhorn (Three Forks, Slater).** Cu, Pb, Ag, Au.
    70 miles SE. Wamsutter, Wyo., U. P. R. R.
    Pre-Cambrian complex.
    Veins.
107. **Hahns Peak (Columbine).** Au, Ag, Pb. (D, Pl.)
    26 miles N. Steamboat Springs, D. N. W. & P. R. R.
    Pre-Cambrian complex and Cretaceous sediments cut by rhyolite porphyry.
    Veins.
    Gale, H. S., The Hahns Peak gold field, Colorado: Bull. 285, 1906, pp. 28–34.
    George, R. D., and Crawford, R. D., The Hahns Peak region, Routt County, Colo.: First Ann. Rept. Colorado Geol. Survey, 1909, pp. 221–226.
    Min. Res. 1905, p. 208.
    1906, p. 230.
    1907, pt. 1, p. 269.
    1908, pt. 1, p. 395.
    1909, pt. 1, p. 324.
108. **Lay (Jackrabbit).** Au. (Pl.)
    8 miles W. Steamboat Springs, D. N. W. & P. R. R.
    River gravels.
    Gale, H. G., Gold placers near Lay, Routt County, Colo.: Bull. 340, 1908, pp. 84–85.
    White, C. A., On the geology and physiography of a portion of northwestern Colorado and adjacent parts of Utah and Wyoming: Ninth Ann. Rept., 1889, p. 691.
    Min. Res. 1906, p. 230.
    1907, pt. 1, p. 269.
    1908, pt. 1, p. 395.
    1909, pt. 1, p. 324.
109. **Oak Creek (Red Gorge).** Cu.
    Station D. N. W. & P. R. R.
110. **Rock Creek (Gore Range).** Cu.
    16 miles E. Yampa, D. N. W. & P. R. R.
111. **Skull Creek (Blue Mountain).** V, U, Cu.
    80 miles NE. Dragoon, Utah, U. R. R.
    Jurassic sediments.
    Disseminations along shear zones.
    Gale, H. S., Carnotite and associated minerals in western Routt County, Colo.: Bull. 340, 1908, pp. 257–262.
    Min. Res. 1908, pt. 1, pp. 741, 748.
112. **Slavonia.** Pb (Ag, Cu, Au).
    40 miles N. Steamboat Springs, D. N. W. & P. R. R.
    Granite, gneiss, and schist cut by granite porphyry and diorite.
    Veins.
    George, R. D., and Crawford, R. D., The Hahns Peak region, Routt County, Colo.: First Ann. Rept. Colorado Geol. Survey, 1909, pp. 221–226.
    Min. Res. 1906, p. 230.
113. **Spring Creek (Steamboat Springs).** Cu, Au.
    Steamboat Springs station, D. N. W. & P. R. R.

SAGUACHE COUNTY.

114. **Baca Grant (Crestone).** Au, Ag.
13 miles E. Moffat, D. & R. G. R. R.
Min. Res. 1905, p. 209.
1906, p. 231.
1907, pt. 1, p. 270.
1908, pt. 1, p. 394.
1909, pt. 1, p. 324.

115. **Blake (Kerber Creek).** Pb, Ag, Au (Cu).
16 miles W. Villagrove, D. & R. G. R. R.
Min. Res. 1905, p. 209.
1906, p. 231.
1907, pt. 1, p. 270.
1909, pt. 1, p. 324.

116. **Crystal Hill.** Ag, Au.
25 miles NW. Del Norte, D. & R. G. R. R.
Min. Res. 1907, pt. 1, p. 270.

SAN JUAN COUNTY.

117. **Animas.** Au, Ag, Cu, Pb, Zn.
Silverton station, D. & R. G. R. R.
Tertiary volcanics.
Veins stockworks.
Emmons, W. H., Ore deposits of Bear Creek, near Silverton, Colo.: Bull. 285, 1906, pp. 25-27.
Ransome, F. L., A report on the economic geology of the Silverton quadrangle, Colorado: Bull. 182, 1901, pp. 1-265.
Min. Res. 1905, pp. 209-210.
1906, p. 232.
1907, pt. 1, pp. 271-272.
1908, pt. 1, pp. 396-397.
1909, pt. 1, p. 326.
Top. sheet Silverton.
Folio 120, 1905.

118. **Eureka.** Au, Ag, Pb, Cu, Zn.
Station S. N. R. R.
Tertiary volcanics.
Veins, stockworks.
Ransome, F. L., A report on the economic geology of the Silverton quadrangle, Colorado: Bull. 182, 1901, pp. 1-265.
Min. Res. 1905, pp. 209-210.
1906, pp. 232-233.
1907, pt. 1, p. 272.
1908, pt. 1, p. 297.
1909, pt. 1, p. 326.
Top. sheet Silverton.
Folio 120, 1905.

SAN MIGUEL COUNTY.

119. **Iron Spring (Ophir).** Au, Ag, Pb, Cu.
Ophir station, R. G. S. R. R.
Tertiary volcanics.
Veins, stockworks.
Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colorado: Eighteenth Ann. Rept., pt. 3, 1898, pp. 745-850.

SAN MIGUEL COUNTY—Continued.

119. **Iron Spring (Ophir)**—Continued.
Min. Res. 1886, p. 145.
1905, pp. 210–211.
1906, p. 234.
1907, pt. 1, pp. 273–274.
1908, pt. 1, p. 399.
1909, pt. 1, p. 328.
Top. sheet Telluride.
Folio 57, 1899.

120. **Lower San Miguel (Placerville, Sawpit, Newmire).** Au, Ag, Pb, Cu, V. (D, Pl.)
Sawpit and Newmire stations, R. G. S. R. R.
Cretaceous sediments cut by dikes.
Veins and replacements.
Hess, F. L., Notes on the vanadium deposits near Placerville, Colo.: Bull. 530, 1912.
Hillebrand, W. F., and Ransome, F. L., On carnotite and associated minerals in western Colorado: Bull. 262, 1905, pp. 9–14.
Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colorado: Eighteenth Ann. Rept., pt. 3, 1898, p. 827.
Min. Res. 1900, pp. 262–265.
1905, p. 211.
1906, p. 234.
1907, pt. 1, p. 274.
1908, pt. 1, p. 299.
1909, pt. 1, p. 328.
Top. sheet Telluride.
Folio 57, 1899.

121. **Mount Wilson.** Ag, Au, Pb, Cu.
12 miles S. Newmire, R. G. S. R. R.
Cretaceous sediments and Tertiary volcanics.
Veins.
Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colorado: Eighteenth Ann. Rept., pt. 3, 1898, pp. 745–850.
Min. Res. 1905, p. 211.
1907, pt. 1, p. 274.
1908, pt. 1, p. 399.
1909, pt. 1, p. 328.
Top. sheet Telluride.
Folio 57, 1899.

122. **Snyderville (Cedar).** V, U.
35 miles WSW. Placerville, R. G. S. R. R.
Jurassic sediments.
Disseminations.
Min. Res. 1906, pp. 531–532.
1908, pt. 1, pp. 741, 748.

123. **Upper San Miguel (Telluride).** Au, Ag, Pb, Cu, Zn.
Telluride station, R. G. S. R. R.
Tertiary volcanics.
Veins, stockworks.
Purington, C. W., Preliminary report on the mining industries of the Telluride quadrangle, Colorado: Eighteenth Ann. Rept., pt. 3, 1898, pp. 745–850.

SAN MIGUEL COUNTY—Continued.

123. **Upper San Miguel (Telluride)—Continued.**
Min. Res. 1905, p. 210.
1906, pp. 233–234.
1907, pt. 1, p. 273.
1908, pt. 1, pp. 398–399.
1909, pt. 1, pp. 327–328.
Top. sheet Telluride.
Folio 57, 1899.

SUMMIT COUNTY.

124. **Breckenridge (Bevan, Union, Minnesota).** Au, Zn, Pb, Ag. (D, Pl.)
Station C. & S. R. R.
Paleozoic and Cretaceous sediments cut by porphyry dikes.
Veins, replacements, and disseminations.
Ransome, F. L., Geology and ore deposits of the Breckenridge district, Colorado: P. P. 75, 1911.
Min. Res. 1905, p. 211.
1906, pp. 235–236, 475.
1907, pt. 1, p. 274.
1908, pt. 1, pp. 400–401.
1909, pt. 1, p. 329.
Top. sheets Leadville, Breckenridge special.

125. **Frisco.** Au, Ag (Pb, Zn).
Station C. & S. R. R.
Min. Res. 1905, p. 211.
1908, pt. 1, p. 401.

126. **Montezuma (Snake River).** Pb, Ag, Cu, Zn, Au.
12 miles E. Dillon, C. & S. R. R.
Pre-Cambrian complex cut by acidic dikes.
Veins.
Patton, H. B., The Montezuma mining district of Summit County, Colo.: First Ann. Rept. Colorado Geol. Survey, 1909, pp. 112–444.
Min. Res. 1905, p. 211.
1906, pp. 236, 475.
1907, pt. 1, p. 275.
1908, pt. 1, p. 401.
1909, pt. 1, p. 329.

127. **Peru.** Ag, Pb, Au.
8 miles E. Dillon, C. & S. R. R.
Min. Res. 1905, p. 211.
1909, pt. 1, p. 329.

128. **Swan River.** Au. (D, Pl.)
12 miles NE. Breckenridge, C. & S. R. R.
Pre-Cambrian complex cut by acidic porphyries.
Veins.
Top. sheet Breckenridge special.

129. **Tenmile (Kokomo).** Ag, Au, Pb, Zn, Cu.
Kokomo station, C. & S. R. R.
Paleozoic sediments cut by acidic dikes.
Veins and replacements.
Min. Res. 1905, pp. 211–212.
1906, p. 236.
1907, pt. 1, p. 275.
1908, pt. 1, p. 401.
1909, pt. 1, p. 329.

SUMMIT COUNTY—Continued.

129. **Tenmile (Kokomo)**—Continued.
Top. sheet Tenmile.
Folio 48, 1898.

TELLER COUNTY.

130. **Cripple Creek.** Au, Ag.
Station C. S. & C. C. R. R.
Tertiary volcanics, mainly phonolite, in pre-Cambrian granite.
Veins.
Cross, W., and Penrose, R. A. F., jr., Geology and mining industries of the Cripple Creek district, Colorado: Sixteenth Ann. Rept., pt. 2, 1895, pp. 13–209.
Hillebrand, W. F., Two tellurium minerals from Colorado: Bull. 262, 1905, pp. 55–57.
Lindgren, W., The geological resurvey of the Cripple Creek district, Colorado: Bull. 260, 1905, pp. 85–98.
Lindgren, W., and Ransome, F. L., Report of progress in the geological resurvey of the Cripple Creek district, Colorado: Bull. 254, 1904.
——— Geology and gold deposits of the Cripple Creek district, Colorado: P. P. 54, 1906.
Min. Res. 1905, pp. 212–214.
1906, pp. 236–240.
1907, pt. 1, pp. 275–278.
1908, pt. 1, pp. 401–405.
1909, pt. 1, pp. 330–333.
Top. sheets Pikes Peak, Cripple Creek special.
Folio 7, 1894.

131. **East Beaver.** Cu, Au, Ag.
8 miles S. Rosemont, C. S. & C. C. R. R.
Pre-Cambrian complex cut by basic dikes.
Veins.

IDAHO.

In the State of Idaho there are 133 mining districts in 20 counties. Gold is the predominant metal produced in 84 districts, silver in 14, lead in 22, and copper in 13.

Distribution of the predominant metals produced in the mining districts of Idaho.

County.	Gold.	Silver.	Copper.	Lead.	Total.
Ada	3				3
Bannock			1		1
Bear Lake			1	1	2
Bingham and Bonneville	1		1		2
Blaine	5	4	1	5	15
Boise	11	1			12
Bonner	3	1	1	1	6
Cassia	2				2
Clearwater	4				4
Custer	5	2	1	1	9
Elmore	6				6
Fremont			1	1	2
Idaho	16		1		17
Kootenai	1	2			3
Latah	3				3
Lemhi	13	2	1	3	19
Owyhee	3	2		1	6
Shoshone	4		2	8	14
Washington and Adams	4		2	1	7
	84	14	13	22	133

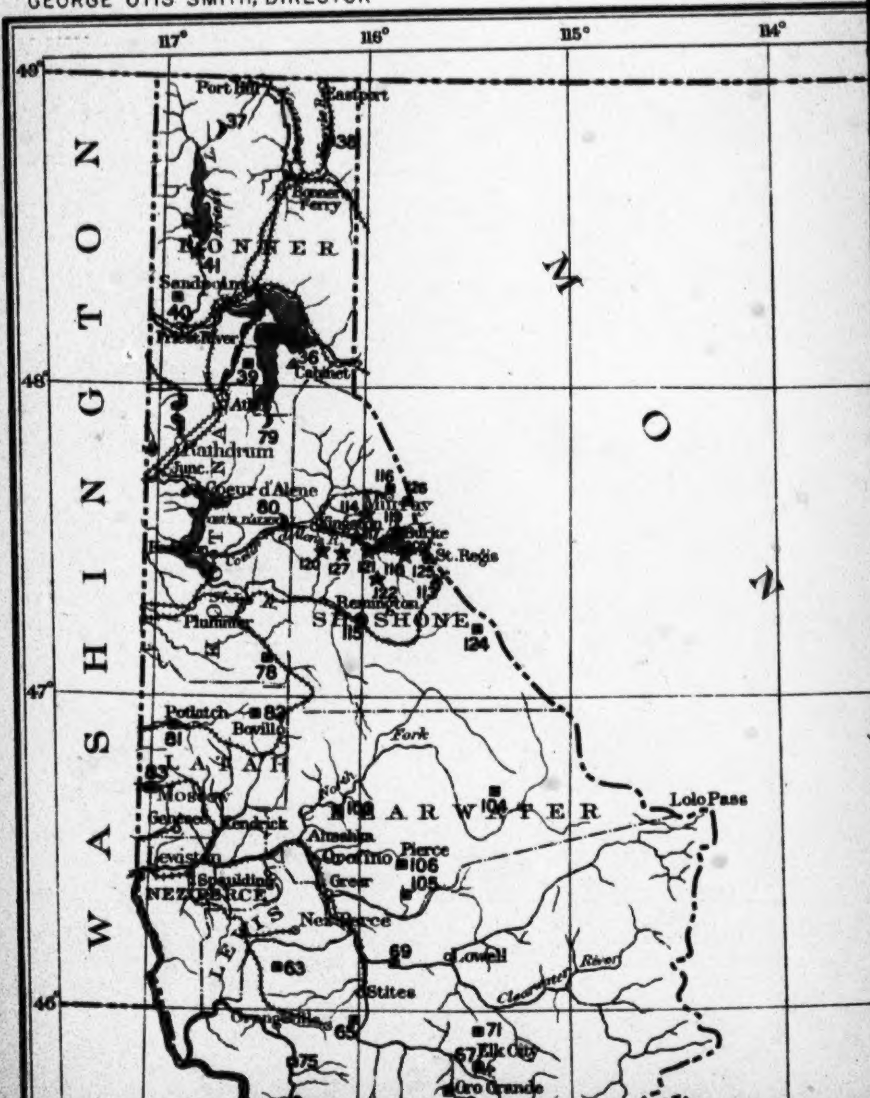
MINING DISTRICTS IN IDAHO.

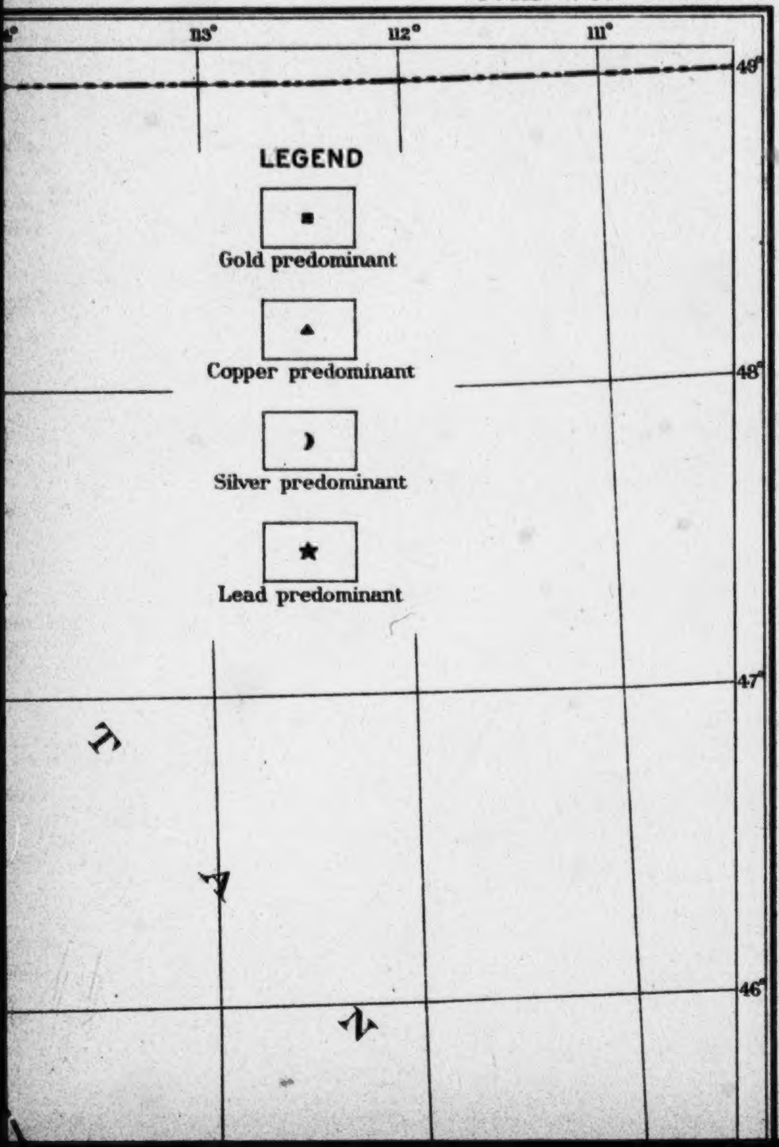
[See Pl. VII. Additional references may be found in Mineral Resources for 1910 and 1911.]

ADA COUNTY.

1. **Black Hornet (Highland Valley, Shaw Mountain).** Au, Ag. (D, Pl.)
   8 miles E. Boise, O. S. L. R. R.
   Granite cut by granite porphyry.
   Veins.
   Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, pp. 703, 705, 707.
   Min. Res. 1905, pp. 224–225.
   1906, pp. 249–250.
   1907, pt. 1, pp. 288–289.
   1908, pt. 1, p. 414.
   1909, pt. 1, p. 341.
   Top. sheet Boise.
   Folio 45, 1898.
2. **Boise (McIntyre).** Au, Ag.
   3 to 5 miles E. Boise, O. S. L. R. R.
   Granite cut by granite porphyry and lamprophyre dikes.
   Veins.
   Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, p. 705.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR


117°
116°
115°
114°
49°
48°
47°
46°
WASHINGTON
MON
Port Hill
Eastport
37
38
Bonners Ferry
BONNER
41
Sandpoint
40
Priest River
36
Cabinet
39
Athol
79
Rathdrum
Junc.
Coeur d'Alene
80
116
126
114
Murray
Burke
St. Regis
120
127
121
118
125
122
117
Remington
SHOSHONE
115
124
Plummer
78
Potlatch
82
Bovill
81
LATAH
83
Moscow
Genesee
Kendrick
North Fork
108
104
CLEARWATER
Lolo Pass
Lewiston
Spaulding
NEZ PERCE
Orofino
Pierce
106
105
Greer
Nez Perce
LEWIS
69
Lowell
63
Stites
Clearwater River
Grangeville
65
71
Elk City
67
Oro Grande
72
75
62
74
IDAHO



LIST OF MINING DISTRICTS

ADA COUNTY

1. Black Hornet (Highland Valley, Shaw Mountain)
2. Boise (McIntyre)
3. Snake River placers

ADAMS COUNTY
(See Washington)

BANNOCK COUNTY

4. Fort Hall

BEAR LAKE COUNTY

5. Bear Lake
6. St. Charles

BINGHAM AND BONNEVILLE COUNTIES

7. Mt. Pisgah (Caribou)
8. Snake River placers

BLAINE COUNTY

9. Antelope
10. Camas
11. Dome
12. Elkhorn (Ketchum)
13. Galena
14. Hamilton (Clyde)
15. Lava Creek (Martin)
16. Little Smoky
17. Little Wood River (Muldoon)
18. Mineral Hill (Hailey)
19. Rosetta
20. Sawtooth
21. Snake River Placer (Neeley)
22. Soldier
23. Warm Springs

BOISE COUNTY

24. Banner
25. Moore Creek
26. Centerville (Idaho Basin)
27. Deadwood
28. Gold Fork (Roseberry)
29. Highland Valley

FREMONT COUNTY

59. Little Lost River (Howe)
60. Skull Canyon (Kaufman)

IDAHO COUNTY

61. Big Creek
62. Camp Howard (White Bird)
63. Cottonwood Buttes
64. Crooks Corral
65. Dewey (Harpster)
66. Dixie
67. Elk City
68. Florence
69. Maggie
70. Marshall (Resort)
71. Newsome
72. Orogrande
73. Profile
74. Robbins (Buffalo Hump)
75. Salmon River placers (Simpson)
76. Thunder Mountain
77. Warren

KOOTENAI COUNTY

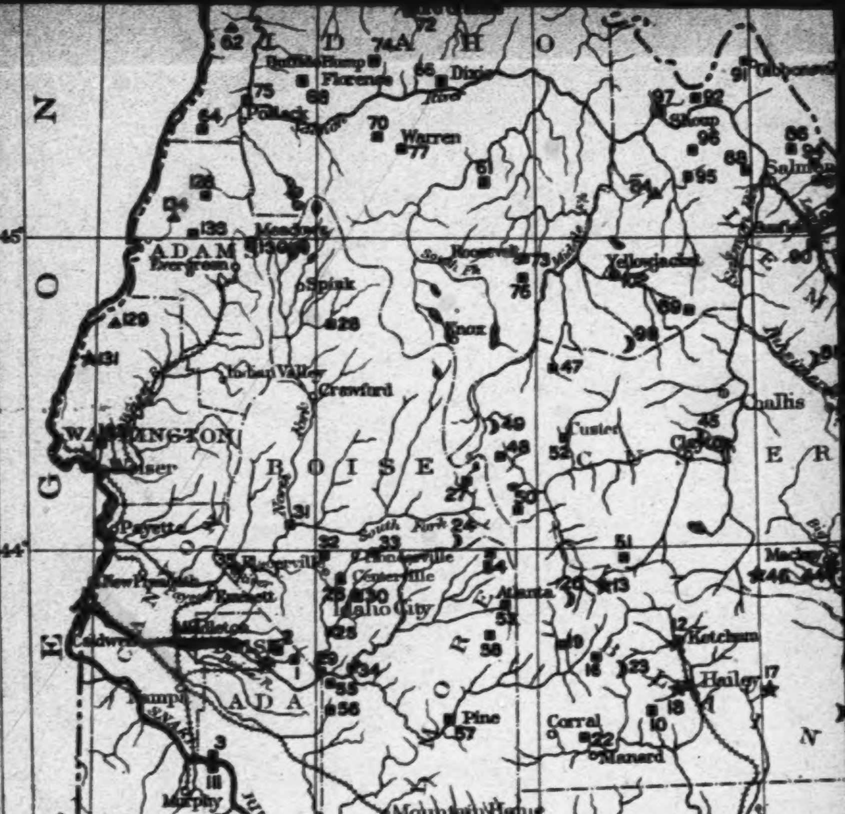
78. Camas Cove (Tyson)
79. Lakeview
80. Medimont

LATAH COUNTY

81. Gold Creek (Potlatch)
82. Hoodoo (Blackbird)
83. Moscow

LEMHI COUNTY

84. Blackbird
85. Bluewing (Patterson Creek)
86. Carmen Creek
87. Eldorado (Geerston)
88. Eureka
89. Gravel Range (Forney)
90. McDevitt
91. Gibbonsville
92. Indian Creek (Ulysses)
93. Junction


IDAHO
ADAMS
WASHINGTON
BOISE
ADA
CUSTER
OWYHEE
TWIN FALLS
LINCOLN
CAS
OREGON
NEVADA
Grangeville
Buffalo Hump
Florence
Dixie
Pollock
Warren
Salmon
Shoup
Gibbonsville
Meadows
Evergreen
Roosevelt
Yellowjacket
Knox
Indian Valley
Crawford
Weiser
Challis
Custer
Clayton
Payette
Placerville
Pioneerville
Centerville
Idaho City
Emmett
New Plymouth
Caldwell
Atlanta
Mackay
Ketchum
Hailey
Nampa
Pine
Corral
Manard
Murphy
Mountain Home
Silver City
De Lamar
Shoshone
Gooding
Jerome
Hot Springs
Buhl
Twin Falls
Shoshone Falls 210'
Mahogany
Lowry
Riddle
Marion
OREGON SHORT
SNAKE RIVER
South Fork
117°
116°
115°
114°
45°
44°
43°
42°

MAP OF IDAHO, SHOWING LOCATIO

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APPROXIMATELY 40 MILES T

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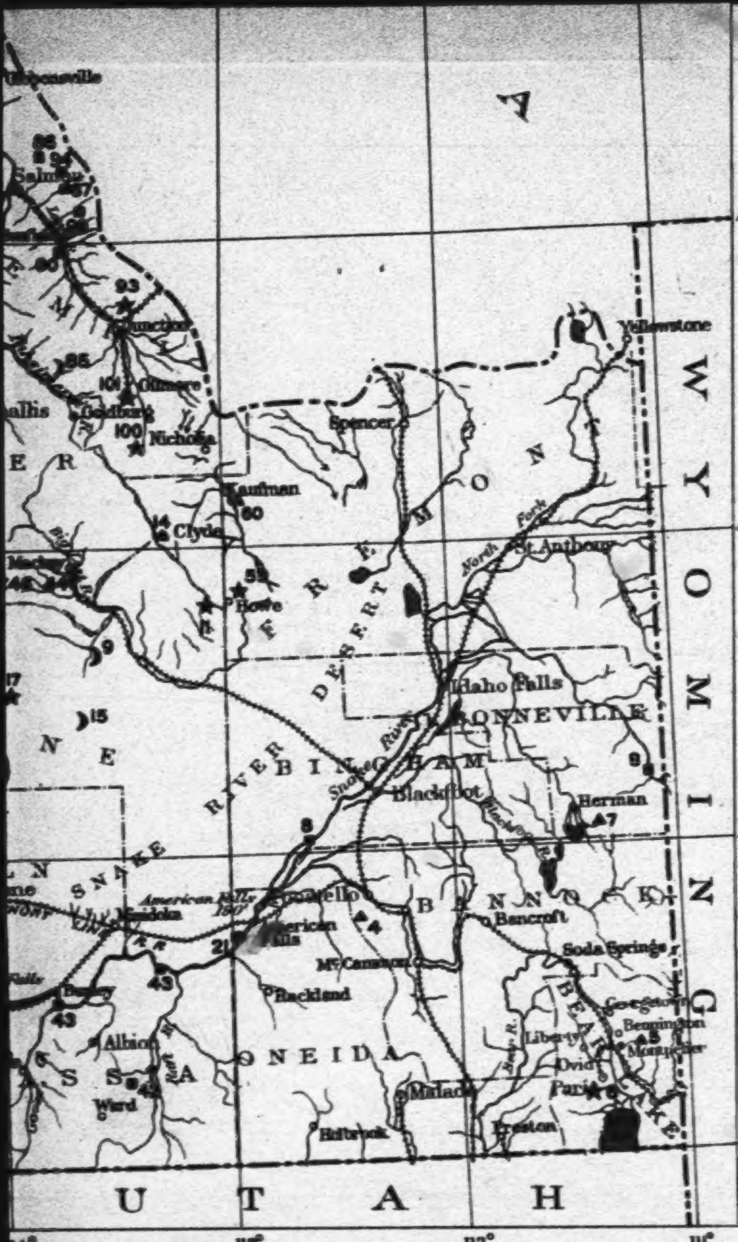

A
Gibbonsville
Salmon
Junction
93
101
Gilmore
100
Nicholia
Goldburg
Challis
E R
Spencer
Kaufman
60
14
Clyde
Mackay
59
Howe
9
17
15
N E
F R E M O N T
DESERT
North Fork
St Anthony
Yellowstone
Idaho Falls
BONNEVILLE
Snake River
BINGHAM
Blackfoot
SNAKE RIVER
8
Herman
7
Blackfoot R.
American Falls
Pocatello
Minidoka
American Falls
21
4
Mt Cammon
Bancroft
BANNOCK
Soda Springs
43
Burley
43
Albion
Hackland
ONEIDA
Georgetown
Bennington
5
Montpelier
Liberty
Ovid
Paris
BEAR LAKE
Bear R.
CASSIA
42
Ward
Malad
Holbrook
Preston
W Y O M I N G
U T A H
114°
113°
112°
111°
JULIUS BIEN CO. LITH

ATION OF MINING DISTRICTS

1
00,000

MILES TO 1 INCH

50 75 100 Miles

50 75 100 Kilometers

28. Gold Fork (Roseberry)
29. Highland Valley
30. Idaho City (Idaho Basin)
31. Payette River placers (Jacobs Gulch)
32. Quartzburg (Idaho Basin)
33. Summit Flat (Pioneerville)
34. Twin Springs
35. Westview (Willow Creek, Rock Creek, Pearl)

BONNER COUNTY

36. East Shore (Clark Fork)
37. Kootenai
38. Mooyie Yaak
39. Pend Oreille (Blacktail)
40. Pine Creek
41. Priest Lake (Coolin)

BONNEVILLE COUNTY (See Bingham)

CASSIA COUNTY

42. Connor Creek (Cumora, Stokes)
43. Snake River placers

CLEARWATER COUNTY

(formerly in Nez Perce County, recently subdivided)

103. Burnt Creek
104. Moose City
105. Musselshell Creek (Weippe)
106. Pierce

CUSTER COUNTY

44. Alder Creek (Lost River)
45. Bay Horse
46. East Fork
47. Loon Creek (Casto)
48. Seafoam
49. Sheep Mountain
50. Stanley Basin
51. Washington Basin
52. Yankee Fork (Custer)

ELMORE COUNTY

53. Atlanta
54. Black Warrior
55. Highland Valley
56. Neal
57. Pine Grove
58. Rocky Bar (Bear Creek)

92. Indian Creek (Ulysses)
93. Junction
94. Kirtley Creek
95. Leesburg (Arnett Creek)
96. Mackinaw
97. Mineral Hill (Shoup)
98. Parker Mountain
99. Pratt Creek
100. Spring Mountain
101. Texas Creek (Gilmore)
102. Yellowjacket

OWYHEE COUNTY

107. Carson (War Eagle, Silver City, Florida Mtn.)
108. De Lamar
109. Flint
110. Mammoth
111. Snake River placers
112. South Mountain

SHOSHONE COUNTY

113. Bald Mountain (Monitor)
114. Beaver (Cœur d'Alene)
115. Black Prince
116. Eagle (Murray, Cœur d'Alene)
117. Evolution (Cœur d'Alene)
118. Hunter (Mullan, Cœur d'Alene)
119. Leland (Burke, Cœur d'Alene)
120. Pine Creek
121. Placer Center (Wallace, Cœur d'Alene)
122. Slate Creek
123. Omitted
124. St. Joe
125. St. Regis (Cœur d'Alene)
126. Summit (Cœur d'Alene)
127. Yreka (Wardner, Cœur d'Alene)

WASHINGTON AND ADAMS COUNTIES

128. Black Lake
129. Heath
130. Meadows
131. Mineral
132. Monroe Creek (Weiser)
133. Placer Basin
134. Seven Devils

ADA COUNTY—Continued.

2. **Boise (McIntyre)**—Continued.
Min. Res. 1907, pt. 1, p. 288.
1908, pt. 1, p. 414.
1909, pt. 1, p. 341.

3. **Snake River placers.** Au. (Pl.)
Stream gravels.
Min. Res. 1905, p. 224.
1907, pt. 1, p. 289.
Top. sheet Bisuka.

ADAMS COUNTY. (See Washington.)

BANNOCK COUNTY.

4. **Fort Hall.** Cu, Ag, Au, Pb.
9 miles E. Pocatello, 1½ miles W. Portneuf, O. S. L. R. R.
Paleozoic sediments and diabase.
Veins.
Weed, W. H., Copper mines in the United States in 1905: Bull. 285, 1906, pp. 107–108.
Weeks, F. B., and Heikes, V. C., Notes on the Fort Hall mining district, Idaho: Bull. 340, 1908, pp. 175–183.
Min. Res. 1905, p. 225.
1906, p. 250.
1907, pt. 1, p. 289.
1908, pt. 1, p. 414.
1909, pt. 1, p. 341.

BEAR LAKE COUNTY.

5. **Bear Lake.** Cu.
4 miles E. Montpelier, O. S. L. R. R.
Triassic "Red Beds."
Disseminations.
Gale, H. S., Geology of the copper deposits near Montpelier, Idaho: Bull. 430, 1910, pp. 112–121.
Weeks, F. B., and Ferrier, W. F., Phosphate deposits in the western United States: Bull. 315, 1907, pp. 460–461.
Weeks, F. B., Phosphate deposits in the western United States: Bull. 340, 1908, pp. 441–444.
Min. Res. 1905, p. 225.
1906, p. 250.
1907, pt. 1, pp. 289–290.

6. **St. Charles.** Pb, Ag, Cu.
5 miles S. Paris, O. S. L. R. R.
Paleozoic sediments.
Veins and replacements.
Richards, R. W., Notes on lead and copper deposits in the Bear River Range, Idaho and Utah: Bull. 470, 1911, pp. 177–187.

BINGHAM AND BONNEVILLE COUNTIES.

7. **Mount Pisgah (Caribou).** Cu, Au, Ag. (Pl, D.)
42 miles NNE. Soda Springs, O. S. L. R. R.
Min. Res. 1905, p. 225.
1906, p. 250.
1907, pt. 1, p. 290.
1908, pt. 1, p. 415.
1909, pt. 1, p. 342.

BINGHAM AND BONNEVILLE COUNTIES—Continued.

8. **Snake River placers.** Au. (Pl.)
Stream gravels.
Min. Res. 1905, p. 225.
1906, p. 250.
1907, pt. 1, p. 290.
1908, pt. 1, p. 415.
1909, pt. 1, p. 342.

BLAINE COUNTY.

9. **Antelope.** Ag, Pb.
17 miles SW. Darlington, O. S. L. R. R.
Min. Res. 1908, pt. 1, p. 416.

10. **Camas.** Au.
20 miles SW. Hailey, O. S. L. R. R.
Granite and diorite.
Veins.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 208.

11. **Dome.** Pb, Ag, Cu, Au.
28 miles NE. Arco, O. S. L. R. R.
Paleozoic sediments and granite.
Veins and replacements.
Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, pp. 264, 271.
Min. Res. 1906, p. 251.
1907, pt. 1, p. 291.
1908, pt. 1, p. 416.
1909, pt. 1, pp. 342-343.

12. **Elkhorn (Ketchum).** Pb, Ag.
Station O. S. L. R. R.
Paleozoic sediments.
Veins.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 209-211.
Min. Res. 1882, pp. 311-312.
1883-84, pp. 424-425.
1885, p. 258.
Top. sheet Hailey.

13. **Galena.** Pb, Ag.
26 miles NW. Ketchum, O. S. L. R. R.
Min. Res. 1882, pp. 311-312.
1883-84, pp. 424-425.
1885, p. 258.
1886, p. 146.
Top. sheet Sawtooth.

14. **Hamilton (Clyde).** Cu, Pb, Ag, Au.
28 miles NE. Mackay, O. S. L. R. R.
Paleozoic sediments.
Veins.
Min. Res. 1907, pt. 1, p. 291.
1908, pt. 1, p. 416.

15. **Lava Creek (Martin).** Ag, Cu, Pb.
24 miles SW. Arco, O. S. L. R. R.
Paleozoic sediments, granite.

BLAINE COUNTY—Continued.

15. **Lava Creek (Martin)**—Continued.
    Veins and replacements.
    Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, pp. 264-271.
    Min. Res. 1906, p. 251.
    1907, pt. 1, p. 291.
    1908, pt. 1, p. 416.

16. **Little Smoky.** Au, Pb, Ag.
    28 miles W. Hailey, O. S. L. R. R.
    Paleozoic sediments cut by granite.
    Veins and replacements.
    Lindgren W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 209.
    Min. Res. 1908, pt. 1, p. 416.
    1909, pt. 1, p. 343.
    Top. sheet Sawtooth.

17. **Little Wood River (Muldoon).** Pb, Ag.
    20 miles E. Bellevue, O. S. L. R. R.
    Paleozoic sediments.
    Veins and replacements.
    Min. Res. 1882, pp. 311-312.
    1883-84, pp. 424-425.
    1885, p. 258.
    1908, pt. 1, p. 416.
    1909, pt. 1, p. 343.

18. **Mineral Hill (Hailey).** Pb, Ag, Zn, Cu, Au.
    Station O. S. L. R. R.
    Paleozoic sediments cut by granitic rocks.
    Veins.
    Lindgren W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 190-209.
    Min. Res. 1882, pp. 311-312.
    1883-84, pp. 424, 425.
    1887, p. 107.
    1905, pp. 226-227.
    1906, pp. 251-252.
    1907, pt. 1, pp. 291-292.
    1908, pt. 1, pp. 416-417.
    1909, pt. 1, p. 343.
    Top. sheet Hailey.

19. **Rosetta.** Au, Ag, Pb, Zn.
    30 miles W. Ketchum, O. S. L. R. R.
    Paleozoic sediments cut by granitic rocks.
    Veins.
    Min. Res. 1905, p. 227.
    1906, p. 252.
    1907, pt. 1, p. 292.
    1909, pt. 1, p. 334.
    Top. sheet Sawtooth.

20. **Sawtooth.** Ag.
    40 miles NW. Ketchum, O. S. L. R. R.
    Granite.

20. **Sawtooth**—Continued.
  Veins.
  Min. Res. 1885, p. 258.
  Top. sheet Sawtooth.
21. **Snake River placer (Neeley).** Au. (Pl.)
  Neeley station, O. S. L. R. R.
  Stream gravels.
  Min. Res. 1905, p. 227.
  1906, p. 252.
22. **Soldier.** Au. (Pl.)
  33 miles N. Gooding, O. S. L. R. R.
  Stream gravels.
  Min. Res. 1908, pt. 1, p. 417.
  1909, pt. 1, p. 343.
23. **Warm Springs.** Ag, Pb, Zn, Au.
  12 miles W. Ketchum, O. S. L. R. R.
  Min. Res. 1882, pp. 311-312.
  1883-84, pp. 424-425.
  1905, p. 227.
  1906, p. 253.
  1907, pt. 1, p. 292.
  1908, pt. 1, p. 417.
  1909, pt. 1, p. 343.
  Top. sheet Sawtooth.

BOISE COUNTY.

24. **Banner.** Ag.
  76 miles NE. Boise, O. S. L. R. R.
  Granite.
  Veins.
  Top. sheet Bear Valley.
25. **Moore Creek.** Au, monazite. (Pl.)
  Stream gravels.
  Top. sheet Idaho Basin.
26. **Centerville (Idaho Basin).** Au. (D, Pl.)
  44 miles NE. Boise, O. S. L. R. R.
  Granite cut by aplite and lamprophyres.
  Veins, stream gravels.
  Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, pp. 617-744.
  Min. Res. 1905, pp. 228-229.
  1906, pp. 253-254.
  1907, pt. 1, p. 293.
  1908, pt. 1, pp. 418-419.
  1909, pt. 1, p. 344.
  Top. sheet Idaho Basin.
27. **Deadwood.** Au. (Pl.)
  80 miles NE. Boise, O. S. L. R. R.
  Stream gravels.
  Min. Res. 1907, pt. 1, p. 293.
  1908, pt. 1, p. 419.
  1909, pt. 1, p. 345.
  Top. sheet Bear Valley.

BOISE COUNTY—Continued.

28. **Gold Fork (Roseberry).** Au. (Pl.)
  41 miles SE. Evergreen, P. & I. N. R. R.
  Tertiary gravels.
  Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 242.
29. **Highland Valley.** Au. (D, Pl.)
  18 miles ESE. Boise, O. S. L. R. R.
  Granite cut by granite porphyry.
  Veins.
  Min. Res. 1908, pt. 1, p. 414.
  1909, pt. 1, p. 345.
  Top. sheet Boise.
  Folio 45, 1898.
30. **Idaho City (Idaho Basin).** Au, monazite. (D, Pl.)
  36 miles NE. Boise, O. S. L. R. R.
  Granite cut by aplite and lamprophyres.
  Veins, stream gravels.
  Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, pp. 617-744.
  Min. Res. 1905, pp. 228-229.
  1906, pp. 253-254.
  1907, pt. 1, p. 293.
  1909, pt. 1, p. 344.
  Top. sheet Idaho Basin.
Moore Creek. See No. 25.
31. **Payette River placers (Jacobs Gulch).** Au. (Pl.)
  Stream gravels.
  Min. Res. 1908, pt. 1, p. 419.
  1909, pt. 1, p. 345.
  Top. sheets Garden Valley, Squaw Creek.
32. **Quartzburg (Idaho Basin).** Au, monazite. (D, Pl.)
  51 miles NNE. Boise, O. S. L. R. R.
  Granite cut by diorite porphyry.
  Veins, stream gravels.
  Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, pp. 617-744.
  Min. Res. 1905, pp. 228-229.
  1906, pp. 253-254.
  1907, pt. 1, p. 293.
  1908, pt. 1, pp. 418-419.
  1909, pt. 1, p. 344.
  Top. sheet Idaho Basin.
33. **Summit Flat (Pioneerville).** Au, Ag.
  50 miles NNE. Boise, O. S. L. R. R.
  Granite cut by aplite and lamprophyre.
  Veins.
  Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, pp. 617-744.
  Min. Res. 1907, pt. 1, p. 294.
  1908, pt. 1, p. 420.
  1909, pt. 1, p. 345.
  Top. sheets Idaho Basin, Garden Valley.

BOISE COUNTY—Continued.

34. **Twin Springs.** Au. (Pl.)
41 miles E. Boise, O. S. L. R. R.
Stream gravels.
Top. sheet Twin Springs.

35. **Westview (Willow Creek, Pearl, Rock Creek).** Au, Ag, Pb.
8 miles NE. Emmett, P. & I. N. R. R.; 15 miles N. Eagle, O. S. L. R. R.
Granite cut by granite and diorite porphyry dikes.
Veins.
Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, p. 707.
Min. Res. 1905, p. 229.
1906, p. 255.
1907, pt. 1, p. 294.
1908, pt. 1, p. 420.
1909, pt. 1, p. 345.
Top. sheet Boise.
Folio 45, 1898.

BONNER COUNTY.

36. **East Shore (Clark Fork).** Cu, Au, Ag, Pb.
Clark Fork and Hope stations, N. P. R. R.
Paleozoic sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 95-97.
MacDonald, D. F., Economic features of northern Idaho and northwestern Montana: Bull. 285, 1906, pp. 47-48.
Min. Res. 1907, pt. 1, p. 294.
1908, pt. 1, p. 420.
1909, pt. 1, p. 345.

37. **Kootenai.** Ag, Pb.
40 miles NW. Iola, G. N. R. R.

38. **Mooyie Yaak.** Au, Pb, Ag.
19 miles NE. Bonners Ferry, G. N. R. R.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 107-108.

39. **Pend Oreille (Blacktail).** Au, Ag, Cu, Pb.
5 miles E. Westmond, N. P. R. R.
Pre-Cambrian sediments cut by monzonites.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 97-99.
MacDonald, D. F., Economic features of western Idaho and northwestern Montana: Bull. 285, 1906, pp. 46-47.
Min. Res. 1907, pt. 1, p. 294.
1908, pt. 1, pp. 420, 421.
1909, pt. 1, p. 345.
Top. sheet Sandpoint.

40. **Pine Creek.** Au, Ag, Pb, Zn.
12 miles NNW. Priest River, G. N. R. R.
Pre-Cambrian sediments.

BONNER COUNTY—Continued.

40. **Pine Creek**—Continued.
Veins.
MacDonald, D. F., Economic features of northern Idaho and northwestern Montana: Bull. 285, 1906, pp. 45–46.
Top. sheet Sandpoint.

41. **Priest Lake (Coolin).** Pb, Ag, Cu, Au.
25 miles N. Priest River, G. N. R. R.
Pre-Cambrian sediments, granite.
Veins.
Min. Res. 1908, pt. 1, p. 420.
1909, pt. 1, p. 345.
Top. sheet Sandpoint.

BONNEVILLE COUNTY. (See Bingham.)

CASSIA COUNTY.

42. **Connor Creek (Cumora, Stokes).** Au, Ag, Pb, Cu.
38 miles SSE. Burley, O. S. L. R. R.
Veins.
Min. Res. 1905, pp. 229–230.
1906, p. 255.
1907, pt. 1, p. 295.
1908, pt. 1, p. 421.

43. **Snake River placers.** Au. (Pl.)
Stream gravels.
Min. Res. 1905, pp. 229–230.
1906, p. 255.
1907, pt. 1, p. 295.

CLEARWATER COUNTY (formerly part of Nez Perce County).

103. **Burnt Creek.** Au. (Pl.)
35 miles NE. Ahsahka, N. P. R. R.
Stream gravels.
Min. Res. 1905, p. 237.
1906, p. 261.
1907, pt. 1, p. 304.
1908, pt. 1, p. 429.
1909, pt. 1, p. 351.

104. **Moose City.** Au. (Pl.)
80 miles NE. Ahsahka, N. P. R. R.
Stream gravels.

105. **Musselshell Creek (Weippe).** Au, monazite. (D, Pl.)
25 miles E. Greer, N. P. R. R.
Granite, gneiss, and schist.
Veins, stream gravels.
Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains: P. P. 27, 1904, p. 105.
Schrader, F. C., An occurrence of monazite in northern Idaho: Bull. 430, 1910, pp. 184–190.

106. **Pierce.** Au. (D, Pl.)
28 miles NE. Greer, N. P. R. R.
Granite, gneiss, and schist.
Veins, bench gravels.

CLEARWATER COUNTY—Continued.

106. **Pierce**—Continued.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains: P. P. 27, 1904, pp. 102–105.
Russell, I. C., Geology and water resources of Nez Perce County, Idaho, pt. 2: W. S. P. 54, 1901.
Min. Res. 1905, p. 237.
1906, pp. 261–262.
1907, pt. 1, p. 304.
1908, pt. 1, p. 429.
1909, pt. 1, p. 351.

CUSTER COUNTY.

44. **Alder Creek (Lost River, White Knob).** Cu, Au, Ag, Pb.
Mackay station, O. S. L. R. R.
Paleozoic sediments, granite, and porphyry.
Contact metamorphic.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 108.
Min. Res. 1905, p. 230.
1906, p. 255.
1907, pt. 1, p. 295.
1908, pt. 1, p. 422.
1909, pt. 1, p. 346.

45. **Bay Horse.** Ag, Pb, Cu, Au.
76 miles NW. Mackay, O. S. L. R. R.
Paleozoic sediments cut by granite.
Veins and replacements.
Min. Res. 1887, p. 107.
1905, p. 230.
1906, p. 256.
1908, pt. 1, p. 422.
1909, pt. 1, p. 346.

46. **East Fork.** Pb, Ag.
24 miles W. Mackay, O. S. L. R. R.
Min. Res. 1908, pt. 1, p. 422.

47. **Loon Creek (Casto, Lost Packer).** Au, Ag, Cu.
125 miles NW. Mackay, O. S. L. R. R.
Pre-Cambrian sediments cut by granite and capped by rhyolite.
Vein.
Umpleby, J. B., A preliminary account of the ore deposits of the Loon Creek district, Idaho: Bull. 530, 1912.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 108.
Min. Res. 1906, p. 256.
1907, pt. 1, p. 295.
1908, pt. 1, p. 422.
1909, pt. 1, p. 346.

48. **Seafoam.** Au, Ag.
109 miles NW. Ketchum, O. S. L. R. R.

CUSTER COUNTY—Continued.

48. **Seafoam**—Continued.
    Min. Res. 1905, p. 230.
    1908, pt. 1, p. 422.
    1909, pt. 1, p. 346.
    Top. sheet Bear Valley.

49. **Sheep Mountain.** Ag, Pb.
    131 miles NW. Ketchum, O. S. L. R. R.
    Granite and schist cut by diorite and quartz porphyry.
    Replacements.
    Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, p. 258.
    Top. sheet Bear Valley.

50. **Stanley Basin.** Au, Ag. (D, Pl.)
    89 miles NW. Ketchum, O. S. L. R. R.
    Granite and porphyry.
    Veins, stream gravels.
    Min. Res. 1905, p. 230.
    1906, p. 256.
    1907, pt. 1, p. 296.
    1908, pt. 1, p. 422.
    1909, pt. 1, p. 346.
    Top. sheet Bear Valley.

51. **Washington Basin.** Au, Ag.
    48 miles NW. Ketchum, O. S. L. R. R.

52. **Yankee Fork (Custer).** Au, Ag.
    114 miles NW. Mackay, O. S. L. R. R.
    Tertiary volcanics.
    Veins.
    Min. Res. 1905, p. 231.
    1906, p. 256.
    1907, pt. 1, p. 296.
    1908, pt. 1, pp. 421–422.
    1909, pt. 1, p. 346.

ELMORE COUNTY.

53. **Atlanta.** Au, Ag. (D, Pl.)
    89 miles NE. Mountain Home, O. S. L. R. R.
    Granite cut by quartz porphyry.
    Veins, stream gravels.
    Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, pp. 253–257.
    Min. Res. 1905, p. 231.
    1906, p. 257.
    1907, pt. 1, p. 297.
    1908, pt. 1, pp. 423–424.
    1909, pt. 1, p. 347.
    Top. sheet Rocky Bar.

54. **Black Warrior.** Au, Ag.
    99 miles NE. Mountain Home, O. S. L. R. R.
    Granite cut by quartz porphyry.
    Veins.
    Min. Res. 1906, p. 256.
    1907, pt. 1, p. 297.
    1908, pt. 1, p. 423.
    1909, pt. 1, p. 347.
    Top. sheet Rocky Bar.

ELMORE COUNTY—Continued.

55. **Highland Valley.** Au, Ag. (Pl.)
25 miles ESE. Boise, O. S. L. R. R.
Stream gravels.
Min. Res. 1907, pt. 1, p. 297.
1908, pt. 1, p. 423.
1909, pt. 1, p. 347.
Top. sheet Idaho Basin.

56. **Neal.** Au, Ag.
25 miles SE. Boise, O. S. L. R. R.
Granite cut by granite and syenite porphyry and lamprophyre.
Veins.
Lindgren, W., The mining districts of Idaho Basin and Boise Ridge, Idaho: Eighteenth Ann. Rept., pt. 3, 1898, pp. 690–703.
Min. Res. 1905, p. 225.
1906, p. 250.
1907, pt. 1, p. 297.
1908, pt. 1, p. 424.
1909, pt. 1, p. 347.
Top. sheet Idaho Basin.

57. **Pine Grove.** Au (Ag).
45 miles NE. Mountain Home, O. S. L. R. R.
Veins (?).
Min. Res. 1905, p. 231.
1906, p. 257.
1907, pt. 1, pp. 297–298.
1908, pt. 1, p. 424.
1909, pt. 1, p. 347.
Top. sheet Camas Prairie.

58. **Rocky Bar (Bear Creek).** Au, Ag.
65 miles NE. Mountain Home, O. S. L. R. R.
Granite cut by diorite, diabase, and quartz porphyry.
Veins.
Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, pp. 250–253.
Min. Res. 1907, pt. 1, p. 297.
1908, pt. 1, p. 423.
1909, pt. 1, p. 347.
Top. sheet Rocky Bar.

FREMONT COUNTY.

59. **Little Lost River (How).** Pb, Ag.
25 miles NE. Arco, O. S. L. R. R.
Min. Res. 1908, pt. 1, p. 424.
1909, pt. 1, p. 347.

60. **Skull Canyon (Kaufman).** Cu, Pb, Ag, Au.
50 miles W. Dubois, O. S. L. R. R.
Paleozoic sediments.
Replacements.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 106.
Min. Res. 1905, p. 231.
1906, p. 257.
1907, pt. 1, p. 298.
1908, pt. 1, p. 424.

IDAHO COUNTY.

61. **Big Creek.** Au, Ag, Pb, Cu.
 60 miles W. Kooskia, N. P. R. R.
 Veins.
 Min. Res. 1907, pt. 1, p. 299.
 1908, pt. 1, p. 425.
 1909, pt. 1, p. 348.

62. **Camp Howard (White Bird).** Cu, Au, Ag.
 12 miles SSW. Grangeville, N. P. R. R.
 Paleozoic sediments cut by diorite.
 Veins.
 Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, p. 107.
 Min. Res. 1907, pt. 1, p. 299.
 1908, pt. 1, p. 425.

63. **Cottonwood Buttes.** Au, Ag, Cu.
 Cottonwood station, N. P. R. R.
 Pre-Tertiary sediments.
 Veins.
 Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 106–107.

64. **Crooks Corral.** Au, Ag. (Pl.)
 51 miles N. Evergreen, P. & I. N. R. R.
 Bench gravels.
 Min. Res. 1907, pt. 1, p. 299.
 1908, pt. 1, p. 425.

65. **Dewey (Harpster).** Au, Cu.
 7 miles W. Grangeville, N. P. R. R.
 Slates and schist cut by diorite.
 Veins.
 Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 105–106.

66. **Dixie.** Au, Ag.
 78 miles SE. Grangeville, N. P. R. R.
 Granite.
 Veins.
 Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
 ——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, p. 98.
 Min. Res. 1905, p. 232.
 1906, p. 258.
 1907, pt. 1, p. 299.
 1908, pt. 1, p. 425.
 1909, pt. 1, p. 348.

67. **Elk City.** Au, Ag. (D, Pl.)
 52 miles SE. Grangeville, N. P. R. R.
 Pre-Cambrian gneiss cut by granite.
 Veins, stream gravels.
 Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
 ——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 91–96.

IDAHO COUNTY—Continued.

67. **Elk City**—Continued.
Min. Res. 1905, p. 232.
1906, p. 258.
1907, pt. 1, p. 299.
1908, pt. 1, p. 425.
1909, pt. 1, p. 348.

68. **Florence.** Au. (D, Pl.)
42 miles SSE. Grangeville, N. P. R. R.
Granite.
Veins, stream gravels.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 232–237.
Min. Res. 1905, p. 232.
1906, p. 258.
1907, pt. 1, p. 299..
1909, pt. 1, p. 348.

69. **Maggie.** Au. (Pl.)
8 miles E. Kooskia, N. P. R. R.
Stream gravels.
Min. Res. 1906, p. 258.

70. **Marshall (Resort).** Au, Ag. (D, Pl.)
50 miles NE. Evergreen, P. & I. N. R. R.
Granite.
Veins, stream gravels.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 277.
Min. Res. 1905, p. 252.
1907, pt. 1, p. 300.
1908, pt. 1, p. 425.
1909, pt. 1, p. 348.

71. **Newsome.** Au. (D, Pl.)
31 miles E. Grangeville, N. P. R. R.
Pre-Cambrian gneiss cut by granite.
Veins, terrace gravels.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 96–98.
Min. Res. 1905, p. 233.
1906, p. 258.
1907, pt. 1, p. 300.
1908, pt. 1, p. 425.
1909, pt. 1, p. 348.

72. **Orogrande.** Au, Ag. (D, Pl.)
61 miles SE. Grangeville, N. P. R. R.
Pre-Cambrian gneiss cut by granite.
Veins, stream gravels.
Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 94–98.
Min. Res. 1905, p. 233.
1906, pp. 425–426.
1909, pt. 1, p. 349.

IDAHO COUNTY—Continued.

73. **Profile.** Au.
151 miles NE. Emmett, P. & I. N. R. R.
Tertiary volcanics.
Veins and impregnations.

74. **Robbins (Buffalo Hump).** Au, Ag.
50 miles SE. Grangeville, N. P. R. R.
Granite, schist cut by granite dikes.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 99–102.
Min. Res. 1905, p. 233.
1906, pp. 258–259.
1907, pt. 1, p. 300.
1908, pt. 1, p. 426.
1909, pt. 1, p. 349.

75. **Salmon River placers (Simpson).** Au, Ag. (Pl.)
Stream gravels.
Min. Res. 1905, pp. 233–234.
1906, p. 259.
1907, pt. 1, p. 300.
1908, pt. 1, p. 426.
1909, pt. 1, p. 349.

76. **Thunder Mountain.** Au, Ag.
139 miles NE. Emmett, P. & I. N. R. R.
Tertiary volcanics.
Veins and impregnations.
Min. Res. 1905, p. 234.
1906, p. 259.
1907, pt. 1, p. 300.
1908, pt. 1, p. 426.
1909, pt. 1, p. 349.

77. **Warren.** Au, Ag (Cu). (D, Pl.)
67 miles NE. Evergreen, P. & I. N. R. R.
Granite cut by lamprophyric dikes.
Veins.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 237–249.
Min. Res. 1905, p. 234.
1906, p. 259.
1907, pt. 1, pp. 300–301.
1908, pt. 1, p. 426.
1909, pt. 1, p. 349.

KOOTENAI COUNTY.

78. **Camas Cove (Tyson).** Au. (Pl.)
18 miles SSE. St. Maries, C. M. & P. S. R. R.
Stream gravels.
Min. Res. 1905, p. 234.
1907, pt. 1, p. 301.
1908, pt. 1, p. 426.

KOOTENAI COUNTY—Continued.

79. **Lakeview.** Ag, Pb.
15 miles E. Athol, N. P. R. R.
Pre-Cambrian sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in western Idaho and northwestern Montana: Bull. 384, 1909, pp. 42, 60, 62, 95-96.
Min. Res. 1905, p. 234.
1906, p. 259.
Top. sheet Rathdrum.

80. **Medimont.** Ag.
Cataldo or Dudley station, N. P. R. R.
Algonkian sediments.
Veins.
Min. Res. 1905, p. 234.

LATAH COUNTY.

81. **Gold Creek (Potlatch).** Au. (Pl.)
Station W. I. & M. R. R.
Stream gravels.
Min. Res. 1905, p. 234.
1907, pt. 1, p. 301.
1908, pt. 1, p. 426.

82. **Hoodoo (Blackbird).** Au. (D, Pl.)
8 to 12 miles NNE. Harvard, W. I. & M. R. R.
Min. Res. 1905, p. 234.
1907, pt. 1, p. 301.
1908, pt. 1, p. 426.

83. **Moscow.** Au. (Pl, D.)
Station N. P. R. R.
Stream gravels.
Min. Res. 1905, p. 234.
1906, p. 259.
1907, pt. 1, p. 301.
Top. sheet Pullman.

LEMHI COUNTY.

84. **Blackbird.** Cu, Au, Ag (Ni, Co).
25 miles W. Noble, G. & P. R. R.
Pre-Cambrian schist, cut by basic dikes and granite.
Veins and replacements.

85. **Bluewing (Patterson Creek).** Ag.
80 miles N. Mackay, O. S. L. R. R.
Granite (?).
Veins (?).

86. **Carmen Creek.** Au, Cu.
Station G. & P. R. R.
Pre-Cambrian schists.
Veins.
Min. Res. 1907, pt. 1, p. 302.

87. **Eldorado (Geertson).** Au.
10 miles NE. Baker, G. & P. R. R.
Pre-Cambrian schists cut by basic dikes.
Veins.

LEMHI COUNTY—Continued.

87. **Eldorado (Geertson)**—Continued.
Min. Res. 1905, p. 236.
1908, pt. 1, p. 427.
1909, pt. 1, p. 350.

88. **Eureka.** Au, Ag.
8 miles NW. Salmon, G. & P. R. R.
Pre-Cambrian schists cut by granite.
Veins.
Min. Res. 1907, pt. 1, p. 302.
1908, pt. 1, p. 427.

89. **Forney (Gravel Range).** Au, Ag. (D, Pl.)
46 miles SW. Salmon, G. & P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1905, p. 236.
1907, pt. 1, p. 302.
1908, pt. 1, p. 427.
1909, pt. 1, p. 350.

90. **McDevitt.** Au. (D, Pl.)
Sunfield station, G. & P. R. R.
Pre-Cambrian schists.
Veins, stream gravels.
Min. Res. 1905, p. 236.
1909, pt. 1, p. 351.

91. **Gibbonsville.** Au, Ag. (D, Pl.)
Station G. & P. R. R.
Pre-Cambrian slates.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, p. 90.
Min. Res. 1905, p. 236.
1906, p. 260.
1907, pt. 1, p. 302.
1908, pt. 1, p. 427.
1909, pt. 1, p. 350.

92. **Indian Creek (Ulysses).** Au, Ag, Cu.
17 miles WNW. Noble, G. & P. R. R.
Pre-Cambrian schist cut by acidic dikes.
Veins.
Min. Res. 1905, p. 236.
1906, pp. 260–261.
1907, pt. 1, p. 302.
1908, pt. 1, p. 427.
1909, pt. 1, p. 350.

93. **Junction.** Pb, Ag.
Station G. & P. R. R.
Paleozoic sediments cut by acidic intrusions.
Veins.
Min. Res. 1907, pt. 1, p. 302.
1908, pt. 1, p. 428.
1909, pt. 1, p. 350.

LEMHI COUNTY—Continued.

94. **Kirtley Creek.** Au. (Pl, D.)
10 miles E. Sunfield, G. & P. R. R.
Pre-Cambrian schists cut by basic dikes.
Veins, stream gravels.
Min. Res. 1907, pt. 1, pp. 302–303.
1908, pt. 1, p. 428.

95. **Leesburg (Arnett Creek).** Au. (Pl, D.)
16 miles W. Salmon, G. & P. R. R.
Pre-Cambrian schist cut by granite.
Veins, stream gravels.
Min. Res. 1905, p. 236.
1907, pt. 1, p. 303.
1908, pt. 1, p. 428.

96. **Mackinaw.** Au, Ag. (Pl, D.)
20 miles NW. Salmon, G. & P. R. R.
Pre-Cambrian complex cut by granite.
Veins, stream gravels.
Min. Res. 1907, pt. 1, p. 303.
1908, pt. 1, p. 428.
1909, pt. 1, p. 350.

97. **Mineral Hill (Shoup).** Au. (D, Pl.)
13 miles W. Noble, G. & P. R. R.
Gneiss cut by granite porphyry and diorite.
Veins, stream gravels.
Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 66, 89–90.
Min. Res. 1905, p. 236.
1906, p. 261.
1907, pt. 1, p. 303.
1908, pt. 1, p. 428.
1909, pt. 1, p. 351.

98. **Parker Mountain.** Ag, Au.
75 miles SW. Salmon, G. & P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1905, p. 236.
1906, p. 261.
1907, pt. 1, pp. 303–304.
1908, pt. 1, p. 428.

99. **Pratt Creek.** Au, Ag, Pb. (Pl, D.)
10 miles E. Baker, G. & P. R. R.
Pre-Cambrian schist.
Veins, stream gravels.
Min. Res. 1908, pt. 1, p. 428.

100. **Spring Mountain.** Pb, Ag, Cu, Au.
38 miles SSE. Junction, G. & P. R. R.; 60 miles NE. Mackay, O. S. L. R. R.
Paleozoic sediments cut by diorite
Veins and replacements.
Min. Res. 1887, p. 107.
1907, pt. 1, p. 303.
1908, pt. 1, p. 428.
1909, pt. 1, p. 351.

LEMHI COUNTY—Continued.

101. **Texas Creek (Gilmore).** Pb, Ag, Au.
19 miles S. Junction, G. & P. R. R.; 80 miles NNW. Dubois, O. S. L. R. R.
Paleozoic sediments cut by basic dikes.
Veins and replacements.
Min. Res. 1905, pp. 235, 236.
1906, pp. 261, 446.
1907, pt. 1, p. 303.
1908, pt. 1, p. 428.
1909, pt. 1, p. 351.

102. **Yellowjacket.** Au. (D, Pl.)
58 miles WSW. Salmon, G. & P. R. R.
Schist (pre-Cambrian?) cut by rhyolite and andesite porphyry and minette.
Veins.
Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, pp. 259-264
Min. Res. 1905, p. 236.
1906, p. 261.
1907, pt. 1, p. 304.
1908, pt. 1, p. 428.
1909, pt. 1, p. 351.

[NOTE.—For Nos. 103-106, see Clearwater County, pp. 165-166.]

OWYHEE COUNTY.

107. **Carson (War Eagle, Silver City, Florida Mountain).** Ag, Au.
23 miles SSW. Murphy, I. N. R. R.
Granite and Tertiary volcanics.
Veins.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 147-157.
Min. Res. 1905, pp. 237-238.
1906, pp. 262-263.
1907, pt. 1, p. 305.
1908, pt. 1, pp. 429-430.
1909, pt. 1, p. 352.
Top. sheet Silver City.
Folio 104, 1904.

108. **De Lamar.** Au, Ag.
31 miles SSW. Murphy, I. N. R. R.
Tertiary volcanics.
Veins.
Eldridge, G. H., A geological reconnaissance across Idaho: Sixteenth Ann. Rept., pt. 2, 1895, pp. 271-274.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 106-147.
Min. Res. 1907, pt. 1, p. 305.
1908, pt. 1, pp. 429-430.
Top. sheet Silver City
Folio 104, 1904.

109. **Flint.** Ag, Au.
40 miles SSW. Murphy, I. N. R. R.
Granite and diorite.
Veins.

OWYHEE COUNTY—Continued.

109. **Flint**—Continued.
 Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 187–190.
 Min. Res. 1909, pt. 1, p. 352.

110. **Mammoth.** Au, Ag.
 33 miles SSW. Murphy, I. N. R. R.
 Granite.
 Veins.
 Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 188.

111. **Snake River placers.** Au. (Pl.)
 Stream gravels.
 Min. Res. 1907, pt. 1, p. 306.
  1908, pt. 1, p. 430.
 Top. sheets Bisuka, Silver City.
 Folio 104, 1904.

112. **South Mountain.** Pb, Ag, Cu.
 46 miles SSW. Murphy, I. N. R. R.
 Schist, diorite, and limestone.
 Contact metamorphic, veins.
 Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 188.
 Min. Res. 1906, p. 446.
  1907, pt. 1, pp. 305–306.

SHOSHONE COUNTY.

113. **Bald Mountain (Monitor).** Cu, Au.
 5½ miles W. Saltese, Mont., N. P. R. R., C. M. & P. S. R. R.
 Pre-Cambrian sediments cut by diabase.
 Veins.
 Collier, A. J., Ore deposits in the St. Joe River basin, Idaho: Bull. 285, 1906, pp. 135–136.
 Pardee, J. T., Geology and mineralization of the upper St. Joe River basin, Idaho: Bull. 470, 1911, pp. 39–61.

114. **Beaver (Cœur d'Alene).** Pb, Ag, Cu, Au. (D, Pl.)
 4 miles NW. Burke, N. P. R. R.
 Pre-Cambrian sediments.
 Veins.
 Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274–303.
 Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.
 Min. Res. 1905, p. 240.
  1906, pp. 264, 445, 446.
  1907, pt. 1, p. 308.
  1908, pt. 1, p. 431.
  1909, pt. 1, pp. 353–354.
 Top. sheet Cœur d'Alene special.

115. **Black Prince.** Cu.
 St. Joe station, C. M. & P. S. R. R.
 Pre-Cambrian quartzite cut by granite.
 Veins.
 Collier, A. J., Ore deposits in the St. Joe River basin, Idaho: Bull. 285, 1906, p. 136.

SHOSHONE COUNTY—Continued.

115. **Black Prince**—Continued.

Pardee, J. T., Geology and mineralization of the upper St. Joe River basin, Idaho: Bull. 470, 1911, pp. 39–61.

116. **Eagle** (**Murray, Cœur d'Alene**). Au (Pb, Ag).

Paragon station, I. N. R. R.

Pre-Cambrian sediments cut by acidic intrusives.

Veins.

Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 108–111.

Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274–303.

Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.

Min. Res. 1905, p. 240.
1906, pp. 264, 445, 446.
1907, pt. 1, p. 308.
1908, pt. 1, p. 431.
1909, pt. 1, pp. 354, 579.

Top. sheet Cœur d'Alene special.

117. **Evolution** (**Cœur d'Alene**). Pb, Ag, Cu (Au).

Kellogg station, N. P. R. R.

Pre-Cambrian sediments.

Veins.

Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274–303.

Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.

Min. Res. 1905, p. 240.
1906, pp. 264, 445, 446.
1908, pt. 1, p. 432.
1909, pt. 1, p. 354.

Top. sheet Cœur d'Alene special.

118. **Hunter** (**Mullan, Cœur d'Alene**). Pb, Ag, Cu, Au.

Mullan station, N. P. R. R.

Pre-Cambrian sediments.

Veins.

Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274–303.

Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.

Min. Res. 1905, p. 240.
1906, pp. 264, 445, 446.
1907, pt. 1, pp. 308–309.
1908, pt. 1, pp. 207–208, 432, 433.
1909, pt. 1, pp. 354–355.

Top. sheet Cœur d'Alene special.

119. **Leland** (**Burke, Cœur d'Alene**). Pb, Ag, Au, Cu, Zn.

Burke station, N. P. R. R.

Pre-Cambrian sediments cut by monzonite.

Veins.

Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274–303.

SHOSHONE COUNTY—Continued.

119. **Leland (Burke, Cœur d'Alene)**—Continued.
Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.
Min. Res. 1905, pp. 240–250.
1906, pp. 264–265, 445–446.
1907, pt. 1, pp. 309–310.
1908, pt. 1, p. 433.
1909, pt. 1, pp. 355–356.
Top. sheet Cœur d'Alene special.

120. **Pine Creek.** Pb, Ag, Zn.
12 miles SSE. Kingston, N. P. R. R.
Pre-Cambrian sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 94–95.

121. **Placer Center (Wallace, Cœur d'Alene).** Pb, Ag, Cu, Zn, W.
Wallace station, N. P. R. R.
Pre-Cambrian sediments cut by monzonite.
Veins.
Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains: P. P. 27, 1904, pp. 108–111.
Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274–303.
Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.
Min. Res. 1905, p. 241.
1906, pp. 265, 445–446.
1907, pt. 1, p. 310.
1908, pt. 1, pp. 434, 723.
1909, pt. 1, p. 356.
Top. sheet Cœur d'Alene special.

122. **Slate Creek.** Pb, Ag.
15 miles S. Wallace, N. P. R. R.
Pre-Cambrian sediments cut by acidic intrusives.
Replacements and veins.
Collier, A. J., Ore deposits of the St. Joe River basin, Idaho: Bull. 285, 1906, pp. 133–134.

123. Omitted.

124. **St. Joe.** Au. (Pl.)
25 miles W. Iron Mountain, Mont., N. P. R. R., C. M. & P. S. R. R.
Stream gravels.
Calkins, F. C., and Jones, E. L., jr., Geology of the St. Joe-Clearwater region, Idaho: Bull. 530, 1912.
Collier, A. J., Ore deposits of the St. Joe River basin, Idaho: Bull. 285, 1906, p. 137.
Pardee, J. T., Geology and mineralization of the upper St. Joe River basin, Idaho: Bull. 470, 1911, pp. 39–61.
Min. Res. 1909, pt. 1, p. 356.

125. **St. Regis (Cœur d'Alene).** Au, Cu.
Lookout station, N. P. R. R.
Pre-Cambrian sediments cut by acidic dikes.
Veins.

SHOSHONE COUNTY—Continued.

125. **St. Regis (Cœur d'Alene)**—Continued.
Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274-303.
Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.
Min. Res. 1905, p. 241.
1906, pp. 266, 445-446.
1907, pt. 1, p. 310.
Top. sheet Cœur d'Alene special.

126. **Summit (Cœur d'Alene).** Au, Pb, Cu, Ag.
10 miles SE. Paragon, I. N. R. R.
Pre-Cambrian sediments.
Veins.
Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1905, pp. 274-303.
Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.
Min. Res. 1905, p. 241.
1906, pp. 266, 445-446.
1907, pt. 1, pp. 310-311, 712.
1908, pt. 1, p. 434.
Top. sheet Cœur d'Alene special.

127. **Yreka (Wardner, Cœur d'Alene).** Pb, Ag, Au, Cu.
Kellogg station, N. P. R. R.
Pre-Cambrian sediments.
Veins.
Lindgren, W., A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 108-111.
Ransome, F. L., Ore deposits of the Cœur d'Alene district, Idaho: Bull. 260, 1906, pp. 274-303.
Ransome, F. L., and Calkins, F. C., The geology and ore deposits of the Cœur d'Alene district, Idaho: P. P. 62, 1908.
Min. Res. 1885, p. 387.
1886, p. 146.
1887, pp. 107-109.
1888, pp. 88-89.
1905, p. 241.
1906, pp. 266, 445, 446.
1908, pt. 1, p. 434.
1909, pt. 1, p. 356-357.
Top. sheet Cœur d'Alene special.

WASHINGTON AND ADAMS COUNTIES.

128. **Black Lake.** Au. (D, Pl.)
40 miles NNW. Council, P. & I. N. R. R.
Min. Res. 1905, p. 242.
1906, p. 267.

129. **Heath.** Cu, Ag, Au.
24 miles NW. Cambridge, P. & I. N. R. R.
Triassic (?) sediments cut by diorite (?).
Contact metamorphic (?).
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, pp. 253-254.

WASHINGTON AND ADAMS COUNTIES—Continued.

129. Heath—Continued.
Min. Res. 1882, p. 229.
1906, p. 267.

130. Meadows. Au. (Pl.)
16 miles NE. Evergreen, P. & I. N. R. R.
Min. Res. 1905, p. 242.
1906, p. 267.

131. Mineral. Pb, Ag, Cu, Au.
29 miles NNE. Huntington, Oreg., O. W. R. R. & N. Co.
Greenstones, quartz diorite.
Replacements, veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 754–756.

132. Monroe Creek (Weiser). Au. (D, Pl.)
10 miles N. Weiser, O. S. L. R. R., O. W. R. R. & N. Co.
Top. sheet Weiser.

133. Placer Basin. Au.
37 miles NNE. Council, P. & I. N. R. R.
Veins.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 253.

134. Seven Devils. Cu, Au, Ag.
37 miles NW. Council, P. & I. N. R. R.
Triassic (?) sediments cut by diorite.
Contact metamorphic.
Lindgren, W., The gold and silver veins of Silver City, De Lamar, and other mining districts in Idaho: Twentieth Ann. Rept., pt. 3, 1900, p. 249.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 108–109.
Min. Res. 1898 (Twentieth Ann. Rept., pt. 6), pp. 182–184.
1905, p. 242.
1906, p. 267.
1907, pt. 1, p. 312.
1908, pt. 1, p. 435.
1909, pt. 1, p. 357.

MONTANA.

Eighteen of the mountain counties of Montana produce all of the metallic wealth of that State. In this region there are 107 mining districts. Gold is the predominant metal in 68 of these districts, lead in 15, copper in 11, silver in 7, zinc in 1, and iron in 1. In 4 camps the predominant metal is uncertain.

Distribution of the predominant metals produced in the mining districts of Montana.

County.	Gold.	Silver.	Copper.	Lead.	Zinc.	Iron.	Unknown.	Total.
Beaverhead	3	3	3	2			1	12
Broadwater	4		1	1				6
Cascade		1		1		1		3
Chouteau	2			1				3
Deer Lodge	2							2
Fergus	3							3
Granite	4			1				5
Jefferson	6			2				8
Lewis and Clark	8	1						9
Lincoln	2			1	1			4
Madison	13			1				14
Meagher			1	1				2
Missoula	4		2	1			2	9
Park	4	1		1				6
Powell	8	1						9
Ravalli	1		3	1				5
Sanders	2			1				3
Silver Bow	3		1					4
	69	7	11	15	1	1	3	107

MINING DISTRICTS IN MONTANA.

[See Pl. VIII. Additional references will be found in Mineral Resources for 1910 and 1911.]

BEAVERHEAD COUNTY.

0a. **Ajax.** Pb, Ag.

1. **Argenta.** Pb, Ag, Au, Cu.
    25 miles WNW. Dillon, O. S. L. R. R.
    Paleozoic sediments cut by granite.
    Contact metamorphic, veins.
    Min. Res. 1906, p. 273.
    1907, pt. 1, p. 320.
    1908, pt. 1, p. 445.
    1909, pt. 1, p. 367.
    Top. sheet Dillon.

1a. **Bald Mountain.** Au, Ag.
    Granite.
    Veins.

2. **Bannack.** Au, Ag, Cu. (Pl, D.)
    40 miles WSW. Dillon, O. S. L. R. R.
    Paleozoic sediments cut by syenite.
    Contact metamorphic.
    Stream gravels, veins.
    Min. Res. 1908, pt. 1, p. 445.
    1909, pt. 1, p. 367.
    Top. sheet Dillon.

BEAVERHEAD COUNTY—Continued.

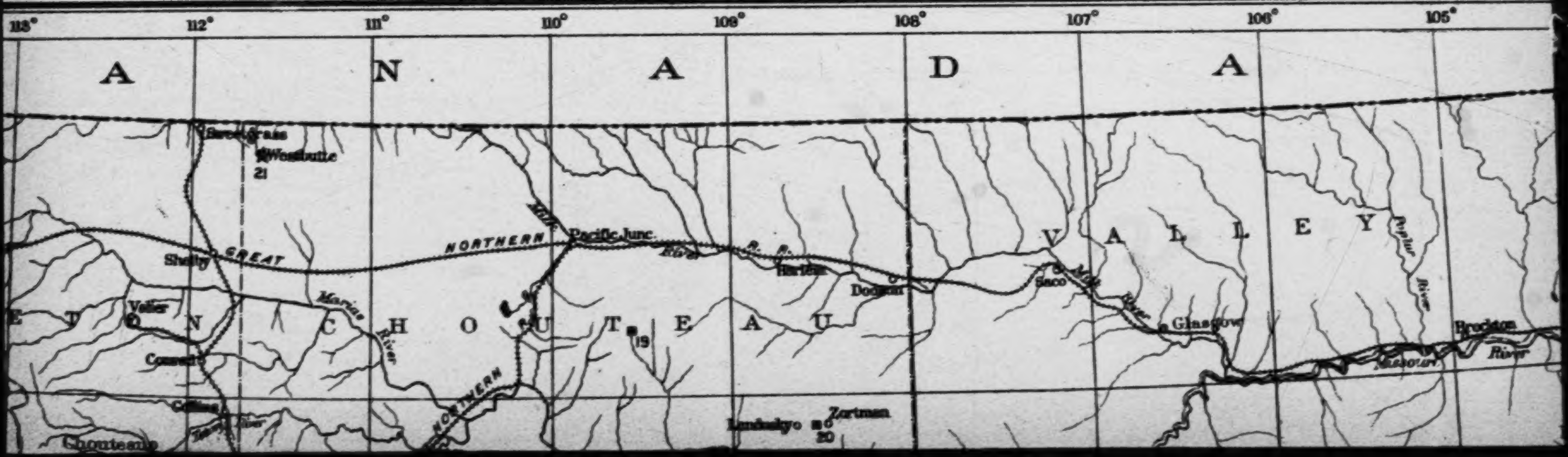
3. **Beaverhead (Dark Horse).** Cu, Ag, Au.
   Grant station, G. & P. R. R.
   Pre-Cambrian sediments cut by diorite.
   Veins.
   Min. Res. 1908, pt. 1, p. 445.
   1909, pt. 1, p. 367.
4. **Bluewing (Dillon).** Ag, Pb, Au, Cu.
   35 miles WNW. Dillon, O. S. L. R. R.
   Paleozoic sediments cut by Tertiary igneous rocks.
   Veins.
   Min. Res. 1907, pt. 1, p. 320.
   1908, pt. 1, p. 445.
   1909, pt. 1, p. 367.
   Top. sheet Dillon.
5. **Bryant (Hecla).** Ag, Cu, Pb, Au, Mo.
   10 miles W. Willis, O. S. L. R. R.
   Paleozoic sediments cut by granite.
   Replacements and contact metamorphic.
   Min. Res. 1882, p. 311.
   1883-84, pp. 423-424.
   1885, p. 258.
   1887, p. 109.
   1888, p. 89.
   1904, p. 341.
   1905, p. 249.
   1906, p. 273.
   1908, pt. 1, p. 445.
   1909, pt. 1, p. 367.
   Top. sheet Dillon.
6. **Elkhorn.** Cu, Ag, Pb (Au).
   45 miles SW. Dillon, O. S. L. R. R.
   Granite.
   Veins.
   Min. Res. 1908, pt. 1, p. 446.
   1909, pt. 1, p. 367.

6a. **Mount Torrey.**
   Top. sheet Dillon.

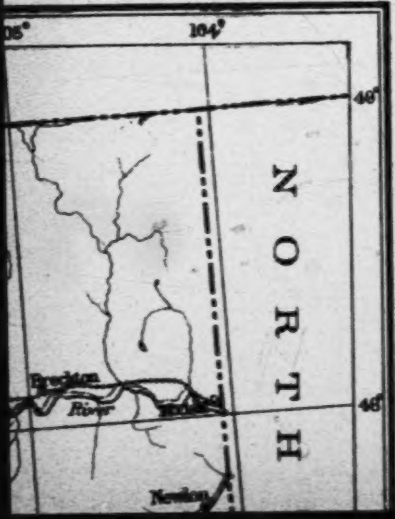
7. **Polaris.** Au, Ag, Cu.
   40 miles W. Apex, 60 miles NW. Dillon, O. S. L. R. R.
   Paleozoic sediments cut by granite.
   Contact metamorphic (?).
   Min. Res. 1908, pt. 1, p. 446.
   Top. sheet Dillon.
8. **Utopia.** Cu, Ag, Au.
   10 miles W. Melrose, O. S. L. R. R.
   Paleozoic sediments cut by granite.
   Contact metamorphic.
   Min. Res. 1907, pt. 1, p. 320.
   1908, pt. 1, p. 446.
   1909, pt. 1, p. 367.
   Top. sheet Dillon.
9. **Vipond.** Ag, Pb, Au, Cu.
   11 miles SW. Divide, O. S. L. R. R.
   Pre-Cambrian complex, Paleozoic sediments cut by granite and aplite.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

116°
115°
114°
113°
49°
48°
C
Rexford
52
LINCOLN
Libby
50
Jennings
Snowshoe
51
49
Cabinet
96
Kalispell
Marion
Columbia Falls
Essex
FLATHEAD
I
D
Thompson


113°
112°
111°
110°
109°
108°
107°
106°
105°
A N A D A
Sweetgrass
Westbutte
21
Shelby
GREAT NORTHERN R. R.
Pacific Junc.
Milk River
Harlem
Dodson
Saco
Glasgow
VALLEY
Poplar River
Brockton
Missouri River
Marias River
Valier
Conrad
Collins
Teton River
Choteau
E T O N
C H O U T E A U
19
NORTHERN
Landusky
Zortman
20

BULLETIN 507 PLATE VIII



LIST OF MINING DISTRICTS

BEAVERHEAD COUNTY

0a. Ajax
1. Argenta
1a. Bald Mountain
2. Bannack
3. Beaverhead (Dark Horse)
4. Bluewing (Dillon)
5. Bryant (Hecla)
6. Elkhorn
6a. Mount Torrey
7. Polaris
8. Utopia
9. Vipond

BROADWATER COUNTY

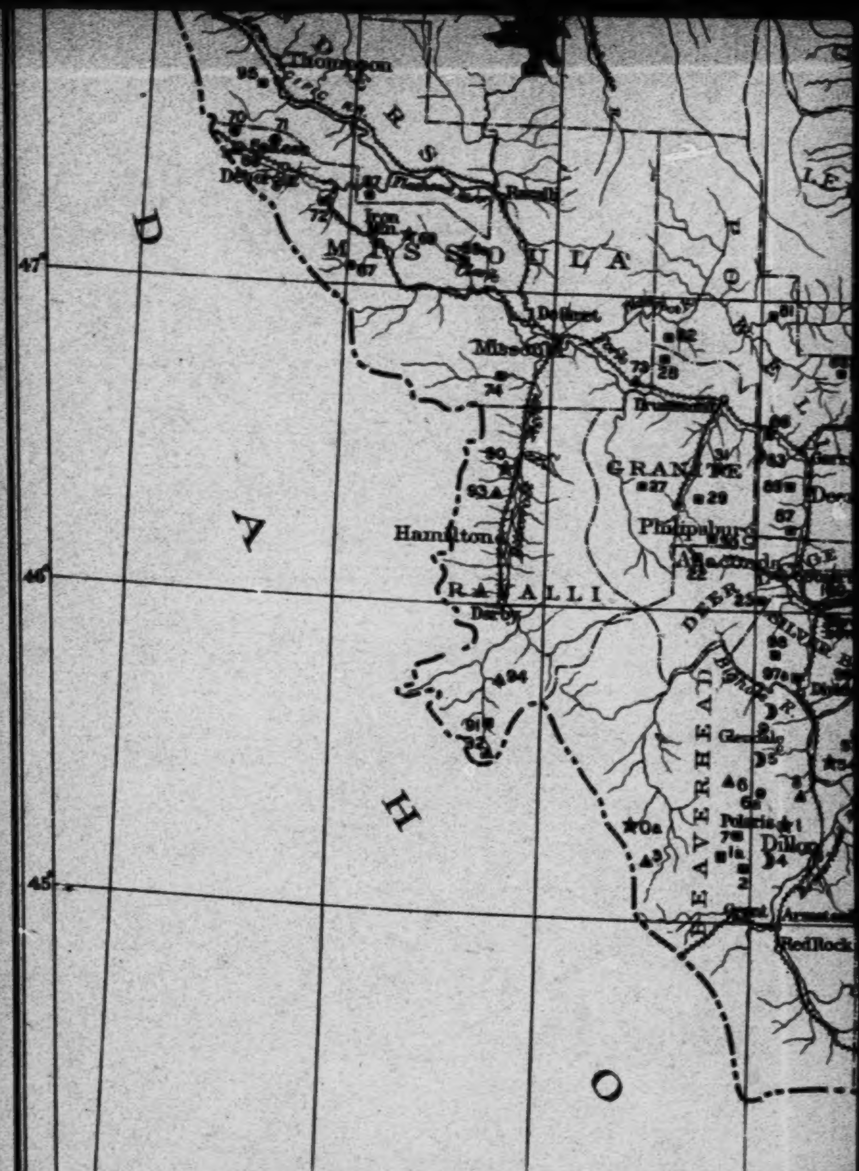
10. Backer (Diamond City)
11. Beaver Creek (Winston)
12. Cedar Plain (Radersburg)
13. Hellgate
14. Lone Mountain
15. Park (Indian Creek)

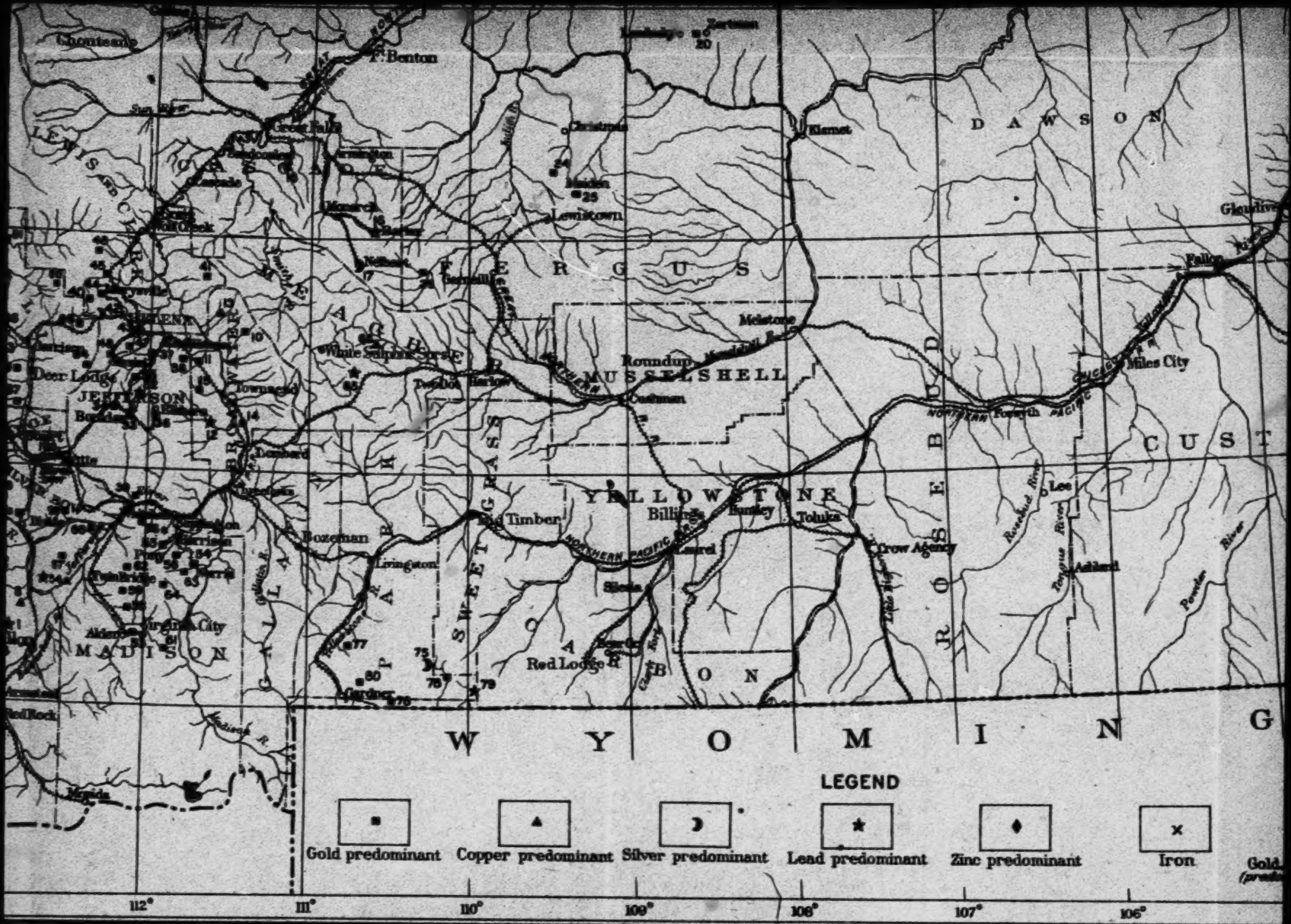
CASCADE COUNTY

MADISON COUNTY

53. Alder Gulch (Virginia City, Fairweather)
54. Lower Hot Springs (Norris)
54a. McCartney Mountain
55. Mineral Hill (Pony)
56. Norwegian (Whitehall)
56a. Point of Rocks (Mammoth)
57. Rabbit
58. Ramshorn (Union)
59. Sheridan (Mill Creek, Wisconsin)
60. Silver Star
61. Summit
62. Tidal Wave (Bear Gulch, Goodrich Gulch)
63. Upper Hot Springs
64. Washington (Meadow Creek)

MEAGHER COUNTY


Thompson
MISSOULA
Iron Mt.
Missoula
De Smet
Hamilton
RAVALLI
Darby
GRANITE
Philipsburg
Anaconda
DEER
BEAVERHEAD
Big Hole R.
Glendale
Polaris
Dillon
Red Rock
D
A
H
O
47°
46°
45°
116°
115°
114°
113°


F. Benton
Great Falls
Klamet
D A W S O N
Christina
Maiden
Lewistown
Glendive
Fallon
F E R G U S
Melstone
Roundup
M U S S E L S H E L L
Cushman
Miles City
Forsyth
NORTHERN PACIFIC
C U S T
Deer Lodge
JEFFERSON
Townsend
White Sulphur Sprs.
Harlow
Dorsey
Three Forks
Bozeman
Livingston
Big Timber
Y E L L O W S T O N E
Billings
Huntley
Toluka
Laurel
Crow Agency
Lee
Ashland
Red Lodge
Gardiner
Virginia City
M A D I S O N
Red Rock
W Y O M I N G
LEGEND
Gold predominant
Copper predominant
Silver predominant
Lead predominant
Zinc predominant
Iron
112°
111°
110°
109°
108°
107°
106°

MAP OF MONTANA, SHOWING LOCATION OF MINING DISTRICTS

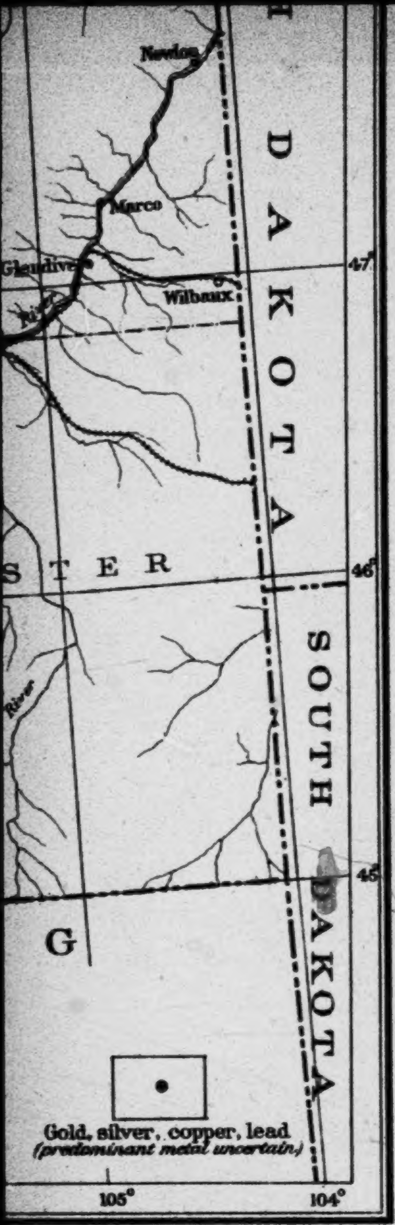
Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912



14. Lone Mountain
15. Park (Indian Creek)

CASCADE COUNTY

16. Barker
17. Montana (Neihart)
18. Sand Coulee

CHOUTEAU COUNTY

19. Bearpaw
20. Little Rockies (Landusky, Zortman, Whitcomb)
21. West Butte

DEER LODGE COUNTY

22. Georgetown (Cable)
23. Heber

FERGUS COUNTY

24. North Moccasin (Kendall)
25. Warm Springs (Giltedge)
26. Yogo

GRANITE COUNTY

27. Black Prince (Combination)
28. First Chance (Garnet)
29. Flint Creek (Philipsburg)
30. Red Lion
31. South Boulder (Princeton)

JEFFERSON COUNTY

32. Amazon
33. Boulder
34. Cataract (Comet, Basin)
35. Colorado (Prickly Pear Creek, Corbin)
36. Elkhorn
37. Lump Gulch (Clancy, Warm Springs)
38. McClellan Creek
39. Whitehall (Cardwell)

LEWIS AND CLARK COUNTY

40. Bald Butte (Marysville)
41. Dry Gulch (York)
42. Greenhorn (Austin)
43. Helena (Spring Hill)
44. Ottawa (Marysville)
45. Poorman
46. Stemple (Fool Hen)
47. Unionville
48. Vaughn (Rimini)

LINCOLN COUNTY

49 Cabinet
50. Callahan Creek (Grouse Mountain)
51. Libby (Snowshoe)
52. Sylvanite

64. Washington (Meadow Creek)

MEAGHER COUNTY

65. Castle Mountain
66. Musselshell (Copperopolis)

MISSOULA COUNTY

67. Cedar Creek (Trout Creek, Superior)
68. Denemora (Big Elk)
69. Iron Mountain
69a. Ninemile Creek (Kennedy Creek)
70. Packer Creek
71. Rock Island
72. St. Regis (Deer Creek, Ward)
73. Wallace (Clinton)
74. Woodman (Mormon Creek)

PARK COUNTY

75. Cowles
76. Crevasse
77. Emigrant Creek (Chico)
78. Horseshoe
79. New World (Cooke)
80. Sheepeater (Bear Gulch, Jardine)

POWELL COUNTY

81. Big Blackfoot (Helmville)
82. Coloma (Elk Washoe, Garnet)
83. Gold Creek
84. Ontario (Elliston)
85. Ophir
86. Pioneer
87. Racetrack Creek
88. Washington Gulch (Finn)
89. Zozell (Deer Lodge)

RAVALLI COUNTY

90. Curlew
91. Hughes Creek (Alta)
92. Mineral Point
93. Pleasant View
94. Slate Creek

SANDERS COUNTY

95. Prospect Creek
96. Silver Butte (Vermilion, Cabinet)
97. Spring Gulch

SILVER BOW COUNTY

97a. Fleecer Mountain
98. German Gulch
99. Highland (Siberia)
100. Summit Valley (Butte)

JULIUS BIEN CO. LITH. N.Y.

BEAVERHEAD COUNTY—Continued.

9. **Vipond**—Continued.
Veins.
Min. Res. 1908, pt. 1, p. 446.
1909, pt. 1, p. 367.
Top. sheet Dillon.

BROADWATER COUNTY.

10. **Backer (Diamond City).** Au, Ag, Cu, Pb. (D, Pl.)
14 miles N. Townsend, N. P. R. R.
Pre-Cambrian slates.
Veins, stream gravels.
Min. Res. 1905, p. 249.
1906, p. 273.
1908, pt. 1, pp. 446–447.
1909, pt. 1, p. 368.
Top. sheet Fort Logan.

11. **Beaver Creek (Winston).** Au, Pb, Ag, Cu. (D, Pl.)
Winston station, N. P. R. R.
Granite and andesite.
Veins, stream gravels.
Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, pp. 84–86.
Min. Res. 1905, p. 249.
1906, pp. 273, 274.
1907, pt. 1, p. 320.
1908, pt. 1, p. 447.
1909, pt. 1, p. 368.
Top. sheet Fort Logan.

12. **Cedar Plain (Radersburg).** Pb, Ag, Cu, Au.
11 miles W. Toston, N. P. R. R.
Andesite porphyry and Tertiary lake beds.
Veins.
Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, pp. 93–96.
Min. Res. 1905, p. 249.
1906, p. 274.
1908, pt. 1, p. 447.
1909, pt. 1, p. 369.
Top. sheet Fort Logan.

13. **Hellgate.** Cu, Ag, Pb, Au.
12 miles N. Winston, N. P. R. R.
Min. Res. 1907, pt. 1, pp. 320–321.
Top. sheet Fort Logan.

14. **Lone Mountain.** Au, Ag, Cu.
Toston station, N. P. R. R.
Top. sheet Fort Logan.

15. **Park (Indian Creek).** Au, Ag, Cu, Pb.
10 miles W. Townsend, N. P. R. R.
Andesite and diorite.
Veins.
Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, pp. 89–91.
Min. Res. 1905, p. 249.
1906, p. 274.
1907, pt. 1, p. 321.

BROADWATER COUNTY—Continued.

15. **Park (Indian Creek)**—Continued.
Min. Res. 1908, pt. 1, p. 447.
1909, pt. 1, p. 369.
Top. sheet Fort Logan.

CASCADE COUNTY.

16. **Barker.** Pb, Ag.
Station G. N. R. R.
Granite and Paleozoic sediments cut by porphyry.
Contact metamorphic, replacements, veins.
Weed, W. H., Geology of the Little Belt Mountains, Montana: Twentieth Ann. Rept., pt. 3, 1900, pp. 344–370, 441–446.
Min. Res. 1883–84, p. 424.
1909, pt. 1, pp. 369–370.
Top. sheet Fort Benton.
Folio 55, 1899.

17. **Montana (Neihart).** Ag, Au, Pb (Cu).
Station G. N. R. R.
Pre-Cambrian gneiss, schist and Algonkian sandstone cut by rhyolite, diorite, and minette dikes.
Veins.
Harder, E. C., Manganese deposits of the United States: Bull. 427, 1910, pp. 148–149.
Weed, W. H., Geology of the Little Belt Mountains, Montana: Twentieth Ann. Rept., pt. 3, 1900, pp. 371–440.
Min. Res. 1905, p. 249.
1906, p. 274.
1907, pt. 1, pp. 321–322.
1908, pt. 1, p. 448.
1909, pt. 1, pp. 369–370.
Top. sheet Little Belt Mountains.
Folio 56, 1899.

18. **Sand Coulee.** Fe.
12 miles SE. Great Falls, N. P. R. R., G. N. R. R.
Min. Res. 1888, p. 34.
1897 (Nineteenth Ann. Rept., pt. 6), p. 56.
Top. sheet Great Falls.

CHOUTEAU COUNTY.

19. **Bearpaw.** Au, Ag, Pb.
45 miles S. Chinook, G. N. R. R.
Cretaceous sediments and Tertiary volcanics.
Veins.
Calhoun, F. H. H., The Montana lobe of the Keewatin ice sheet: P. P. 50, 1906.
Pepperberg, L. J., Notes on the mineral deposits of the Bearpaw Mountains, Montana: Bull. 430, 1910, pp. 135–146.

20. **Little Rockies (Landusky, Zortman, Whitcomb).** Au, Ag.
45–50 miles SSW. Dodson, G. N. R. R.
Pre-Cambrian schists, Paleozoic sediments domed by acidic Tertiary porphyries.
Replacements.
Emmons, W. H., Gold deposits of the Little Rocky Mountains, Montana: Bull. 340, 1908, pp. 96–116.

CHOUTEAU COUNTY—Continued.

20. Little Rockies (Landusky, Zortman, Whitcomb)—Continued.
Min. Res. 1905, p. 250.
1906, p. 275.
1907, pt. 1, p. 322.
1908, pt. 1, p. 448.
1909, pt. 1, p. 370.

21. West Butte. Pb, Ag, Au.
54 miles NW. Chester, G. N. R. R.
Min. Res. 1908, pt. 1, p. 448.

DEER LODGE COUNTY.

22. Georgetown (Cable). Au, Cu, Ag.
7½ miles WNW. Brown's siding, B. A. & P. R. R.
Paleozoic sediments cut by granite.
Replacement, veins.
Emmons, W. H., The Granite-Bimetallic and Cable mines, Philipsburg quadrangle, Montana: Bull. 315, 1907, pp. 45–54.
Min. Res. 1898 (Twentieth Ann. Rept., pt. 6), p. 55.
1905, p. 250.
1906, p. 275.
1907, pt. 1, p. 322.
1908, pt. 1, p. 449.
1909, pt. 1, p. 370.
Top. sheet Philipsburg.

23. Heber. Au, Ag, Pb, Cu. (D, Pl.)
10 miles W. Gregson, B. A. & P. R. R.
Min. Res. 1906, p. 275.
1907, pt. 1, p. 323.
Top. sheet Helena.

FERGUS COUNTY.

24. North Moccasin (Kendall). Au, Ag.
20 miles N. Lewiston, C. M. & P. S. R. R.
Paleozoic and Mesozoic sediments cut by acidic intrusives.
Replacements.
Weed, W. H., and Pirsson, L. V., Geology and mineral resources of the Judith Mountains, Montana: Eighteenth Ann. Rept., pt. 3, 1898, pp. 437–616.
Min. Res. 1905, p. 250.
1906, p. 276.
1907, pt. 1, p. 323.
1908, pt. 1, pp. 449–450.
1909, pt. 1, p. 371.

25. Warm Springs (Giltedge). Au, Pb, Ag, Cu.
15 miles NE. Lewiston, C. M. & P. S. R. R.
Paleozoic and Mesozoic sediments cut by intrusives.
Replacements.
Weed, W. H., and Pirsson, L. V., Geology and mineral resources of the Judith Mountains, Montana: Eighteenth Ann. Rept., pt. 3, 1898, pp. 437–616.
Min. Res. 1898 (Twentieth Ann. Rept., pt. 6), pp. 56–57.
1905, pp. 250–251.
1906, p. 276.
1907, pt. 1, p. 323.
1908, pt. 1, p. 450.
1909, pt. 1, p. 371.

FERGUS COUNTY—Continued.

26. **Yogo.** Au, Ag, Cu, Pb.
    30 miles WSW. Philbrook, G. N. R. R.
    Paleozoic sediments cut by minettes.
    Contact metamorphic.
    Weed, W. H., Geology of the Little Belt Mountains, Montana: Twentieth Ann. Rept., pt. 3, 1900, pp. 317-333, 447-461.

GRANITE COUNTY.

27. **Black Prince (Combination).** Au, Cu.
    15 miles SW. Hall, N. P. R. R.
    Pre-Cambrian sediments.
    Veins.
    Top. sheet Sapphire.
28. **First Chance (Garnet).** Au, Ag, Cu, Pb. (D, Pl.)
    11 miles N. Bearmouth, N. P. R. R., C. M. & P. S. R. R.
    Paleozoic sediments cut by granite.
    Veins, stream gravels.
    Min. Res. 1905, p. 251.
    1906, p. 276.
    1907, pt. 1, p. 324.
    1908, pt. 1, p. 451.
    1909, pt. 1, p. 372.
29. **Flint Creek (Philipsburg).** Au, Ag, Pb, Cu.
    Station N. P. R. R.
    Pre-Cambrian and Paleozoic sediments cut by granite.
    Veins, contact metamorphic.
    Emmons, W. H., The Granite-Bimetallic and Cable mines, Philipsburg quadrangle, Montana: Bull. 315, 1907, pp. 36-45.
    Min. Res. 1905, p. 251.
    1906, p. 277.
    1907, pt. 1, pp. 324-325.
    1908, pt. 1, p. 451.
    1909, pt. 1, p. 372.
    Top. sheet Philipsburg.
30. **Red Lion.** Au, Ag.
    25 miles NW. Anaconda, B. A. & P. R. R.
    Paleozoic sediments cut by granite.
    Veins and replacements.
    Min. Res. 1905, p. 252.
    1906, p. 277.
    1908, pt. 1, p. 451.
    Top. sheet Philipsburg.
31. **South Boulder (Princeton).** Pb, Ag, Au, Cu.
    12 miles ESE. Flint, N. P. R. R.
    Paleozoic sediments cut by granite.
    Veins.
    Min. Res. 1905, p. 252.
    1906, p. 277.
    1907, pt. 1, p. 325.
    1908, pt. 1, p. 451.
    1909, pt. 1, p. 372.
    Top. sheet Philipsburg.

JEFFERSON COUNTY.

32. **Amazon.** Pb, Ag, Au, Cu.
    Station G. N. R. R.
    Granite.
    Veins.
    Min. Res. 1908, pt. 1, p. 452.
    1909, pt. 1, p. 373.
    Top. sheets Boulder, Helena.
33. **Boulder.** Pb, Ag, Au. (D, Pl.)
    Station G. N. R. R.
    Granite cut by rhyolite.
    Veins.
    Weed, W. H., Mineral-vein formation at Boulder Hot Springs, Mont.: Twenty-first Ann. Rept., pt. 2, 1900, pp. 227-255
    Min. Res. 1906, p. 278.
    1907, pt. 1, p. 326.
    1908, pt. 1, p. 452.
    1909, pt. 1, p. 373.
    Top. sheets Boulder, Helena.
34. **Cataract (Comet, Basin).** Au, Ag, Pb, Cu. (D, Pl.)
    Basin station, G. N. R. R.
    Andesite cut by granite, both cut by dacite.
    Veins.
    Min. Res. 1904, p. 233.
    1905, p. 252.
    1906, p. 278.
    1907, pt. 1, p. 326.
    1908, pt. 1, p. 452.
    1909, pt. 1, pp. 373-374.
    Top. sheets Boulder, Helena.
35. **Colorado (Prickly Pear Creek, Corbin).** Au, Ag, Cu, Pb.
    Corbin station, G. N. R. R.
    Andesite cut by granite, both cut by dacite.
    Veins.
    Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, p. 89
    Min. Res. 1883-84, p. 423.
    1905, pp. 252-253.
    1906, pp. 278-279.
    1907, pt. 1, p. 326.
    1908, pt. 1, p. 453.
    1909, pt. 1, p. 374.
    Top. sheets Boulder, Helena.
36. **Elkhorn.** Au, Ag, Pb, Cu.
    Station G. N. R. R.
    Paleozoic sediments cut by diorite, gabbro, and quartz monzonite.
    Replacements, contact metamorphic.
    Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, pp. 96-98.
    Weed, W. H., and Barrell, J., Geology and ore deposits of Elkhorn mining district, Jefferson County, Mont.: Twenty-second Ann. Rept., pt. 2, 1900, pp. 399-550.
    Min. Res. 1905, p. 253.
    1906, p. 279.
    1907, pt. 1, p. 327.

JEFFERSON COUNTY—Continued.

36. **Elkhorn**—Continued.
Min. Res. 1908, pt. 1, p. 453.
1909, pt. 1, p. 374.
Top. sheet Fort Logan.

37. **Lump Gulch (Clancy, Warm Springs).** Au, Ag, Pb, Cu.
Clancy station, G. N. R. R.
Granite.
Vein.
Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, pp. 79–80.
Min. Res. 1905, p. 253.
1906, p. 279.
1907, pt. 1, p. 327.
1908, pt. 1, p. 453.
1909, pt. 1, pp. 374–375.
Top. sheets Boulder, Fort Logan.

38. **McClellan Creek.** Au, Ag, Cu, Mo.
9 miles NE. Clancy, G. N. R. R.
Andesite cut by granite.
Veins.
Stone, R. W., Geologic relation of ore deposits in the Elkhorn Mountains, Montana: Bull. 470, 1911, pp. 86–87.

39. **Whitehall (Cardwell).** Au, Ag. (D, Pl.)
Station N. P. R. R.
Pre-Cambrian and Paleozoic sediments cut by andesite porphyry.
Veins.
Min. Res. 1908, pt. 1, p. 453.
1909, pt. 1, p. 375.
Top. sheet Dillon.

LEWIS AND CLARK COUNTY.

40. **Bald Butte (Marysville).** Au, Ag, Pb, Cu.
2 miles W. Marysville, N. P. R. R.
Pre-Cambrian sediments cut by granite.
Veins.
Barrell, J., Geology of the Marysville mining district, Montana: P. P. 57, 1907.
Weed, W. H., Gold mines of the Marysville district, Montana: Bull. 213, 1903, pp. 88–89.
Min. Res. 1906, p. 280.
1907, pt. 1, p. 328.
1909, pt. 1, p. 375.
Top. sheet Helena.

41. **Dry Gulch (York).** Au, Pb, Ag. (D, Pl.)
20 miles NE. Helena, G. N. R. R., N. P. R. R.
Min. Res. 1906, p. 280.
1909, pt. 1, p. 376.
Top. sheet Fort Logan.

42. **Greenhorn (Austin).** Ag, Au, Pb, Cu.
Austin station, N. P. R. R.
Pre-Cambrian and Paleozoic sediments cut by granite.
Veins.
Min. Res. 1908, pt. 1, p. 454.
1909, pt. 1, p. 376.
Top. sheet Helena.

LEWIS AND CLARK COUNTY—Continued.

43. **Helena (Spring Hill).** Au, Pb, Ag, Cu. (D, Pl.)
Station N. P. R. R., G. N. R. R.
Pre-Cambrian and Paleozoic sediments cut by granite.
Veins.
Min. Res. 1883-84, pp. 422-423.
1885, pp. 257-258.
1887, p. 109.
1888, p. 89.
1905, p. 253.
1906, p. 280.
1907, pt. 1, p. 329.
1909, pt. 1, p. 376.
Top. sheets Helena, Helena special.

44. **Ottawa (Marysville).** Au, Ag, Cu, Pb.
Marysville station, N. P. R. R.
Pre-Cambrian sediments cut by granite.
Veins.
Weed, W. H., Gold mines of the Marysville district, Montana: Bull. 213, 1903, pp. 88-89.
Min. Res. 1905, p. 253.
1906, p. 280.
1907, pt. 1, p. 328.
1908, pt. 1, p. 454.
1909, pt. 1, p. 376.
Top. sheets Helena, Marysville special.

45. **Poorman.** Au, Ag (Cu).
Silver station, G. N. R. R.
Min. Res. 1907, pt. 1, p. 329.
1909, pt. 1, p. 376.
Top. sheets Helena, Marysville special.

46. **Stemple (Fool Hen).** Au, Ag, Pb, Cu.
25 miles NW. Silver, G. N. R. R.
Sediments cut by granite.
Veins.
Min. Res. 1905, p. 254.
1906, p. 280.
1907, pt. 1, p. 329.
1908, pt. 1, p. 454.
1909, pt. 1, p. 376.
Top. sheet Helena.

47 **Unionville.** Au, Ag (Cu, Pb).
5 miles SSW. Helena, G. N. R. R., N. P. R. R.
Paleozoic sediments cut by granite
Veins.
Min. Res. 1883-84, p. 423.
1905, p. 254.
1906, p. 280.
1907, pt. 1, p. 329.
1908, pt. 1, p. 454.
1909, pt. 1, p. 376.
Top. sheets Helena, Boulder, Helena special.

48 **Vaughn (Rimini).** Au, Ag, Pb.
Rimini station, N. P. R. R.
Granite capped by rhyolite.

LEWIS AND CLARK COUNTY—Continued.

48. **Vaughn (Rimini)—Continued.**
Veins.
Min. Res. 1906, p. 281.
1907, pt. 1, p. 329.
1908, pt. 1, p. 454.
1909, pt. 1, p. 376.
Top. sheet Boulder.

LINCOLN COUNTY.

49. **Cabinet.** Au.
25 miles SSE. Libby, G. N. R. R.; 15 miles NNE. Trout, N. P. R. R.
Pre-Cambrian sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 105–106.
MacDonald, D. F., Economic features of northern Idaho and northwestern Montana: Bull. 285, 1906, p. 50.

50. **Callahan Creek (Grouse Mountain).** Zn, Pb.
8 miles S. Troy, G. N. R. R.
Pre-Cambrian sediments cut by basic dikes.
Veins, contact metamorphic.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 99–102.
MacDonald, D. F., Economic features of northern Idaho and northwestern Montana: Bull. 285, 1906, p. 48.

51. **Libby (Snowshoe).** Pb, Ag, Au. (D, Pl.)
18 miles S. Libby, G. N. R. R.
Pre-Cambrian sediments.
Veins, stream gravels.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 103–105.
Schrader, F. C., Gold-bearing ground moraine in northwestern Montana: Bull. 470, 1911, pp. 70–74.
Min. Res. 1905, p. 251.
1906, p. 276.
1907, pt. 1, p. 324.
1908, pt. 1, p. 450.
1909, pt. 1, p. 377.

52. **Sylvanite.** Au.
18 miles NNW. Troy, G. N. R. R.
Pre-Cambrian sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, pp. 102–103.
MacDonald, D. F., Economic features of northern Idaho and northwestern Montana: Bull. 285, 1906, pp. 49–50.
Min. Res. 1909, pt. 1, p. 377.

MADISON COUNTY.

53. **Alder Gulch (Virginia City, Fairweather).** Au, Ag. (Pl.)
12 miles E. Alder, N. P. R. R.
Stream gravels.
Min. Res. 1906, p. 281.
1907, pt. 1, pp. 330–331.
1908, pt. 1, pp. 455–456.
1909, pt. 1, p. 378.

MADISON COUNTY—Continued.

53. **Alder Gulch (Virginia City, Fairweather)**—Continued.
Top. sheets Three Forks, Dillon.
Folio 24, 1896.

54. **Lower Hot Springs (Norris).** Au, Ag. (Pb, Cu.)
Station N. P. R. R.
Pre-Cambrian gneiss.
Veins.
Min. Res. 1905, p. 254.
1906, p. 281.
1907, pt. 1, p. 331.
1908, pt. 1, p. 456.
1909, pt. 1, p. 378.
Top. sheet Three Forks.
Folio 24, 1896.

54a. **McCartney Mountain.** Pb, Ag.
Quartzite and slates cut by granite.
Veins.
Top. sheet Dillon.

55. **Mineral Hill (Pony).** Au, Cu, Ag, Pb, Zn.
Pony station, N. P. R. R.
Pre-Cambrian gneiss cut by granite.
Veins.
Min. Res. 1905, pp. 254–255.
1906, p. 282.
1907, pt. 1, p. 331.
1908, pt. 1, p. 456.
1909, pt. 1, p. 378.
Top. sheet Three Forks.
Folio 24, 1896.

56. **Norwegian (Whitehall).** Au, Ag, Cu, Pb.
5 miles SE. Pony, N. P. R. R.
Pre-Cambrian gneiss.
Veins.
Min. Res. 1905, p. 255.
1907, pt. 1, p. 332.
1908, pt. 1, p. 456.
1909, pt. 1, p. 379.
Top. sheet Three Forks.
Folio 24, 1896.

56a. **Point of Rocks (Mammoth).** Au, Ag, Cu, Pb.
12 miles SE. Whitehall, N. P. R. R.
Pre-Cambrian and Paleozoic sediments cut by quartz monzonite.
Veins.
Top. sheet Dillon.

57. **Rabbit.** Au, Ag, Pb, Cu.
12 miles NW. Twin Bridges, N. P. R. R.
Pre-Cambrian complex cut by aplite.
Veins.
Min. Res. 1905, p. 255.
1906, p. 282.
1907, pt. 1, p. 331.
1908, pt. 1, p. 456.
1909, pt. 1, p. 379.
Top. sheet Dillon.

MADISON COUNTY—Continued.

58. **Ramshorn (Union).** Au, Ag, Cu, Pb.
8 miles E. Laurin, N. P. R. R.
Pre-Cambrian schist and sediments cut by granite.
Veins.
Min. Res. 1908, pt. 1, p. 456.
1909, pt. 1, p. 379.
Top. sheet Dillon.

59. **Sheridan (Mill Creek, Wisconsin).** Au, Pb, Ag, Cu.
6 miles E. Sheridan station, N. P. R. R.
Pre-Cambrian schist and sediments cut by granite.
Veins.
Min. Res. 1905, p. 255.
1908, pt. 1, p. 456.
1909, pt. 1, p. 379.
Top. sheet Dillon.

60. **Silver Star.** Au, Pb, Cu, Ag.
4 miles NW. Silver Star siding, N. P. R. R.
Pre-Cambrian schist and Paleozoic sediments cut by quartz monzonite.
Veins and contact metamorphic.
Min. Res. 1905, p. 255.
1906, p. 282.
1907, pt. 1, p. 331.
1908, pt. 1, pp. 456–457.
1909, pt. 1, p. 379.
Top. sheet Dillon.

61. **Summit.** Au, Ag, Pb.
20 miles SE. Alder, N. P. R. R.
Pre-Cambrian complex.
Veins.
Min. Res. 1905, p. 255.
1906, p. 282.
1907, pt. 1, p. 332.
1908, pt. 1, p. 457.
1909, pt. 1, p. 379.
Top. sheet Three Forks.
Folio 24, 1896.

62. **Tidal Wave (Bear Gulch, Goodrich Gulch).** Au, Pb, Ag, Cu.
10 miles E. Twin Bridges, N. P. R. R.
Pre-Cambrian and Paleozoic sediments cut by granite.
Veins and contact metamorphic.
Min. Res. 1906, p. 283.
1907, pt. 1, p. 332.
1908, pt. 1, p. 457.
1909, pt. 1, p. 379.
Top. sheet Dillon.

63. **Upper Hot Springs.** Au, Pb, Ag.
8 miles W. Norris, N. P. R. R.
Granite porphyry cut by aplite.
Veins.
Min. Res. 1905, p. 255.
1906, p. 283.
1907, pt. 1, p. 332.
1908, pt. 1, p. 457.
1909, pt. 1, p. 380.

MADISON COUNTY—Continued.

63. **Upper Hot Springs**—Continued.
Top. sheet Three Forks.
Folio 24, 1896.

64. **Washington (Meadow Creek).** Au, Pb, Ag.
12 miles SW. Norris, N. P. R. R.
Pre-Cambrian complex cut by granite and andesite.
Veins.
Min. Res. 1905, p. 255.
1906, p. 283.
1907, pt. 1, p. 332.
1908, pt. 1, p. 457.
1909, pt. 1, p. 380.
Top. sheet Three Forks.
Folio 24, 1896.

MEAGHER COUNTY.

65. **Castle Mountain.** Pb, Ag, Cu.
7 miles W. Lennep, C. M. & P. S. R. R.
Pre-Cambrian and Paleozoic sediments cut by granite and diorite.
Replacements.
Harder, E. C., Manganese deposits of the United States: Bull. 427, 1910, pp. 148–149.
Weed, W. H., and Pirsson, L. V., Geology of the Castle Mountain mining district, Montana: Bull. 139, 1896.
Min. Res. 1893, p. 131.
1894 (Sixteenth Ann. Rept., pt. 3), pp. 417–418.
1906, p. 333.
1908, pt. 1, p. 457.
Top. sheet Little Belt Mountains.
Folio 56, 1899.

66. **Musselshell (Copperopolis).** Cu, Au, Ag.
14 miles NW. Martinsdale, C. M. & P. S. R. R.
Pre-Cambrian and Paleozoic sediments cut by granite and diorite.
Replacements.
Weed, W. H., and Pirsson, L. V., Geology of the Castle Mountain mining district, Montana: Bull. 139, 1896.
Min. Res. 1906, p. 283.
1908, pt. 1, p. 457.
1909, pt. 1, p. 380.
Top. sheet Little Belt Mountains.
Folio 56, 1899.

MISSOULA COUNTY.

67. **Cedar Creek (Trout Creek, Superior).** Au. (Pl.)
15 miles SW. Superior, C. M. & P. S. R. R.
Stream gravels.
Min. Res. 1905, p. 256.
1908, pt. 1, p. 458.
1909, pt. 1, pp. 380–381.

68. **Denemora (Big Elk).** Cu, Au, Ag, Pb.
Saltese station, C. M. & P. S. R. R.
Pre-Cambrian sediments cut by acidic dikes.
Replacements and veins.

MISSOULA COUNTY—Continued.

69. **Iron Mountain.** Pb, Ag.
22 miles NNW. Hudson, N. P. R. R., C. M. & P. S. R. R.
Pre-Cambrian sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, p. 107.
Min. Res. 1908, pt. 1, p. 458.
1909, pt. 1, p. 381.

69a. **Ninemile Creek (Kennedy Creek).** Au. (Pl.)
12 miles NW. Huson, N. P. R. R., C. M. & P. S. R. R.
Glacial gravels (?)
Schrader, F. C., Gold-bearing ground moraine in northwestern Montana: Bull. 470, 1911, pp. 62–74.
Min. Res, 1909, pt. 1, p. 381.

70. **Packer Creek.**
5 miles N. Saltese, C. M. & P. S. R. R.
Pre-Cambrian sediments cut by acidic intrusives.
Replacements.

71. **Rock Island.**
8 miles N. Henderson, N. P. R. R.
Pre-Cambrian sediments cut by acidic intrusives.
Replacements and veins.

72. **St. Regis (Deer Creek, Ward).** Au. (D, Pl.)
St. Regis station, N. P. R. R., C. M. & P. S. R. R.
Min. Res. 1907, pt. 1, p. 333.
1909, pt. 1, p. 381.

73. **Wallace (Clinton).** Cu, Au, Ag, Pb.
Clinton station, N. P. R. R.
Min. Res. 1905, p. 256.
1906, p. 283.
1907, pt. 1, p. 333.
Top. sheet Bonner.

74. **Woodman (Mormon Creek).** Au, Cu.
11 miles W. Lolo, N. P. R. R.
Pre-Cambrian sediments cut by diorite.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains, in Montana and Idaho: P. P. 27, 1904, p. 86.

PARK COUNTY.

75. **Cowles.** Ag.
50 miles ENE. Gardiner, N. P. R. R.
Pre-Cambrian gneiss, gabbro, diorite.
Veins.
Top. sheet Livingston.
Folio 1, 1894.

76. **Crevasse.** Au, Ag.
10 miles ESE. Gardiner, N. P. R. R.
Pre-Cambrian gneiss.
Veins.
Min. Res. 1905, p. 256.
1906, p. 284.
1907, pt. 1, p. 333.

PARK COUNTY—Continued.

76. **Crevasse**—Continued.
Top. sheet Livingston.
Folio 1, 1894.

77. **Emigrant Creek (Chico).** Au. (D, Pl.)
5 miles SSE. Fridley, N. P. R. R.
Andesite, dacite.
Veins.
Min. Res. 1908, pt. 1, p. 458.
Top. sheet Livingston.
Folio 1, 1894.

78. **Horseshoe.** Au.
60 miles E. Gardiner, N. P. R. R.
Pre-Cambrian gneiss cut by andesite and dacite.
Veins.
Top. sheet Livingston.
Folio 1, 1894.

79. **New World (Cooke).** Pb, Ag, Cu, Au.
65 miles E. Gardiner, N. P. R. R.
Basic lavas (?).
Veins.
Min. Res. 1906, p. 283.
1908, pt. 1, p. 458.

80. **Sheepeater (Bear Gulch, Jardine).** Au, Ag, W. (D, Pl.)
6 miles NE. Gardiner, N. P. R. R.
Pre-Cambrian gneiss, andesite, dacite.
Veins, stream gravels.
Min. Res. 1905, p. 256.
1906, p. 284.
1907, pt. 1, p. 333.
1908, pt. 1, p. 458.
Top. sheet Livingston.
Folio 1, 1894.

POWELL COUNTY.

81. **Big Blackfoot (Helmville).** Au. (Pl.)
22 miles NNE. Drummond, N. P. R. R., C. M. & P. S. R. R.
Stream gravels.
Min. Res. 1909, pt. 1, p. 382.
Top. sheet Helena.

82. **Coloma (Elk, Washoe, Garnet).** Au, Ag, Cu.
15 miles N. Bearmouth, 29 miles E. Bonner, N. P. R. R.
Paleozoic sediments cut by granite.
Veins.
Min. Res. 1905, p. 257.
1908, pt. 1, p. 459.
1909, pt. 1, p. 382.
Top. sheet Bonner.

83. **Gold Creek.** Ag, Pb, Au, Cu. (Pl, D.)
10 miles SSW. Gold Creek, N. P. R. R., C. M. & P. S. R. R.
Granite.
Veins, stream gravels.
Min. Res. 1906, p. 277.
1907, pt. 1, p. 325.

POWELL COUNTY—Continued.

84. **Ontario (Elliston).** Au, Ag, Pb.
Elliston station, N. P. R. R.
Paleozoic and Mesozoic sediments, andesite cut by granite.
Veins.
Min. Res. 1905, p. 257.
1906, p. 284.
1907, pt. 1, p. 334.
1909, pt. 1, p. 382.
Top. sheets Boulder, Helena.

85. **Ophir.** Au, Ag, Cu, Pb.
9 miles N. Avon, N. P. R. R.
Paleozoic sediments cut by granite.
Contact metamorphic.
Min. Res. 1908, pt. 1, p. 459.
1909, pt. 1, p. 382.
Top. sheet Helena.

86. **Pioneer.** Au, Ag. (Pl.)
Gold Creek station, N. P. R. R.
Stream gravels.
Min. Res. 1908, pt. 1, p. 459.
1909, pt. 1, p. 382.
Top. sheet Helena.

87. **Racetrack Creek.** Au. (Pl.)
Station N. P. R. R.
Stream gravels.
Top. sheet Helena.

88. **Washington Gulch (Finn).** Au, Ag, Pb, Cu. (D, Pl.)
15 miles NNW. Avon, N. P. R. R.
Min. Res. 1907, pt. 1, p. 334.
1908, pt. 1, p. 459.
1909, pt. 1, p. 382.
Top. sheet Helena.

89. **Zozell (Deer Lodge).** Au, Ag, Pb.
9 miles W. Deer Lodge, N. P. R. R., C. M. & P. S. R. R.
Cretaceous andesites.
Veins.
Min. Res. 1905, p. 257.
1906, p. 284.
1907, pt. 1, p. 334.
1908, pt. 1, p. 459.
1909, pt. 1, p. 383.
Top. sheet Helena.

RAVALLI COUNTY.

90. **Curlew.** Pb, Ag.
5 miles W. Victor, N. P. R. R.
Paleozoic sediments.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 86–87.
Min. Res. 1906, p. 284.
1907, pt. 1, p. 334.
Top. sheet Hamilton.

RAVALLI COUNTY—Continued.

91. **Hughes Creek (Alta).** Au, Sn. (D, Pl.)
36 miles S. Darby, N. P. R. R.
Quartzite.
Stream gravels, veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, pp. 88–89.
Min. Res. 1909, pt. 1, p. 383.

92. **Mineral Point.** Cu, Ag, Pb.
40 miles S. Darby, N. P. R. R.
Schists, granite, and gneiss.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, p. 89.

93. **Pleasant View.** Cu, Ag.
5 miles W. Stevensville, N. P. R. R.
Granite.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, p. 87.
Top. sheet Hamilton.

94. **Slate Creek.** Cu, Ag.
30 miles S. Darby, N. P. R. R.
Granite porphyry.
Veins.
Lindgren, W., Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana: Bull. 213, 1903, pp. 66–70.
——— A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho: P. P. 27, 1904, p. 88.

SANDERS COUNTY.

95. **Prospect Creek.** Au, Ag, Pb.
9 miles W. Thompson, N. P. R. R.
Pre-Cambrian sediments cut by basic dikes.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, p. 106.
MacDonald, D. F., Economic features of northern Idaho and northwestern Montana: Bull. 285, 1906, pp. 51–52.
Min. Res. 1908, pt. 1, p. 460.

96. **Silver Butte (Vermilion, Cabinet).** Pb, Ag.
10 miles N. Trout Creek, N. P. R. R., C. M. & P. S. R. R.
Pre-Cambrian sediments.
Veins.
Calkins, F. C., and MacDonald, D. F., A geological reconnaissance in northern Idaho and northwestern Montana: Bull. 384, 1909, p. 105.

97. **Spring Gulch.** Au, Cu, Pb, Ag.
10 miles E. St. Regis, N. P. R. R., C. M. & P. S. R. R.
Min. Res. 1908, pt. 1, pp. 459–460.
1909, pt. 1, p. 383.

SILVER BOW COUNTY.

97a. **Fleecer Mountain.** Au, Ag, Cu.
Paleozoic sediments cut by granite and andesite.
Veins, contact metamorphic.
Min. Res. 1909, pt. 1, p. 384.

98. **German Gulch.** Au, Ag.
15 miles W. Silver Bow, N. P. R. R.
Pre-Cambrian sediments cut by diorite.
Disseminated.
Min. Res. 1909, pt. 1, p. 384.

99. **Highland (Siberia).** Au, Ag.
20 miles ENE. Divide, O. S. L. R. R.
Pre-Cambrian and Paleozoic sediments cut by quartz monzonite.
Replacements and contact metamorphic.

100. **Summit Valley (Butte).** Cu, Ag, Au, Zn.
Station C. M. & P. S. R. R., G. N. R. R., N. P. R. R,, O. S. L. R. R.,
Quartz monzonite cut by aplite, rhyolite.
Veins.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, pp. 273–274; Bull. 427, 1910, pp. 132–133.
Peters, E. D., Mines and reduction works of Butto City: Min. Res. 1883–84, pp. 374–396.
Weed, W. H., Ore deposits at Butte, Mont.: Bull. 213, 1903, pp. 170–180.
——— The copper mines of the United States in 1905: Bull. 285, 1906, pp. 112–115.
Min. Res. 1882, pp. 224–225.
1883–84, pp. 336–340.
1885, pp. 216, 349.
1886, p. 117.
1888, pp. 57–58.
1891, pp. 90–99.
1900, pp. 157–158.
1904, pp. 232–233.
1905, pp. 257–259, 350–352.
1906, pp. 285–287, 399–401, 478.
1907, pt. 1, pp. 105, 334–337, 609–611, 713.
1908, pt. 1, pp. 211–212, 460–461, 722.
1909, pt. 1, pp. 170, 384–386.
Top. sheets Helena, Butte special.
Folio 38, 1897.

NEVADA.

In Nevada there are 182 mining districts in the 15 counties credited with the metallic wealth of the State. In 105 of these districts gold is the most valuable metal produced, in 38 silver, in 17 copper, in 14 lead, in 2 tungsten, in 1 iron, in 1 manganese, and in 1 zinc. Quicksilver was formerly mined exclusively in one locality. Two districts in the State are classed as uncertain—that is, the predominant metal is not known.

Distribution of the predominant metals produced in the mining districts of Nevada.

County.	Gold.	Silver.	Copper.	Lead.	Zinc.	Iron.	Rare metals.	Quicksilver.	Unknown.	Total.
Churchill	7	4	1							12
Clark	6		3		1					10
Douglas	2		1							3
Elko	10	1	4	3						18
Esmeralda and Mineral	21	2	1	1						25
Eureka	2	3		2						7
Humboldt	12	4	3	1		1	1			22
Lander	2	7	1						1	11
Lincoln	4	7		2						13
Lyon	3		1	1		1				6
Nye	26	6	1							33
Storey	1									1
Washoe	5	1		2				1		9
White Pine	4	3	1	2			1		1	12
	105	38	17	14	1	2	2	1	2	182

MINING DISTRICTS IN NEVADA.

[See Pl. IX. Additional references will be found in Mineral Resources for 1910 and 1911.]

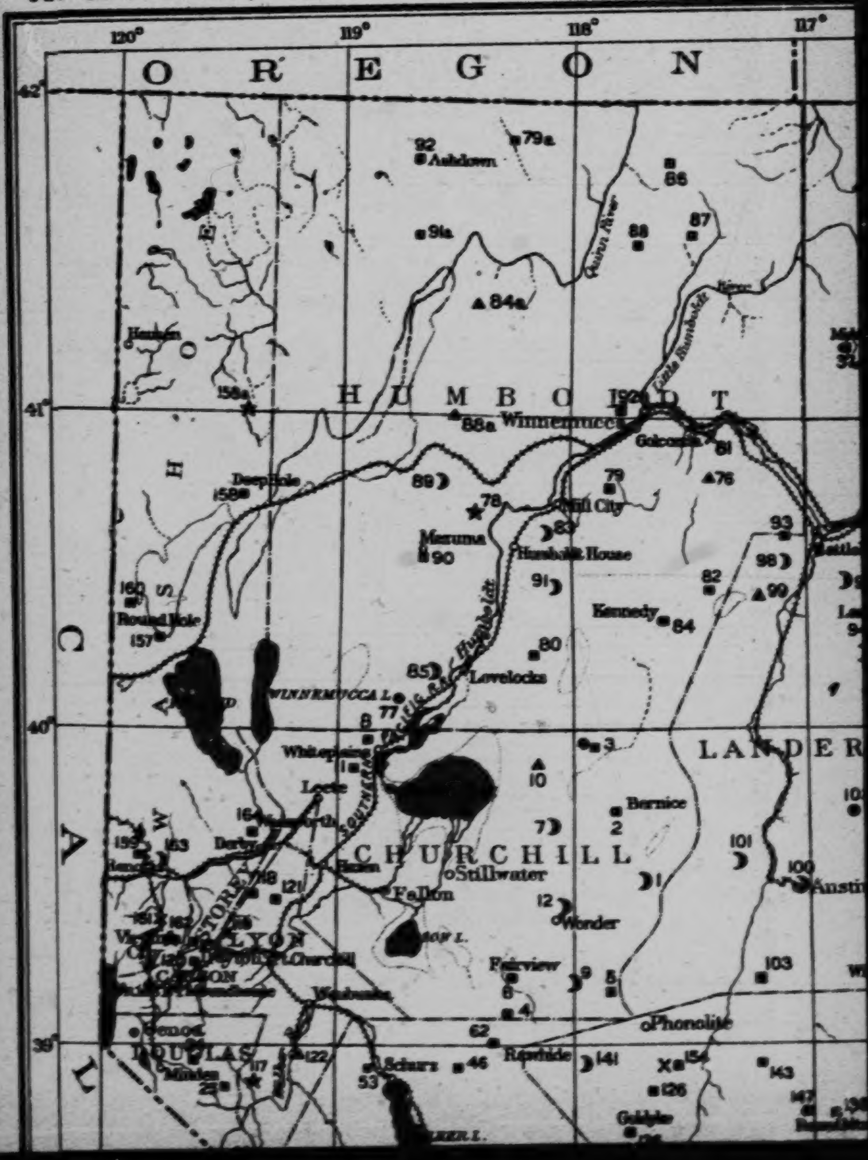
CHURCHILL COUNTY.

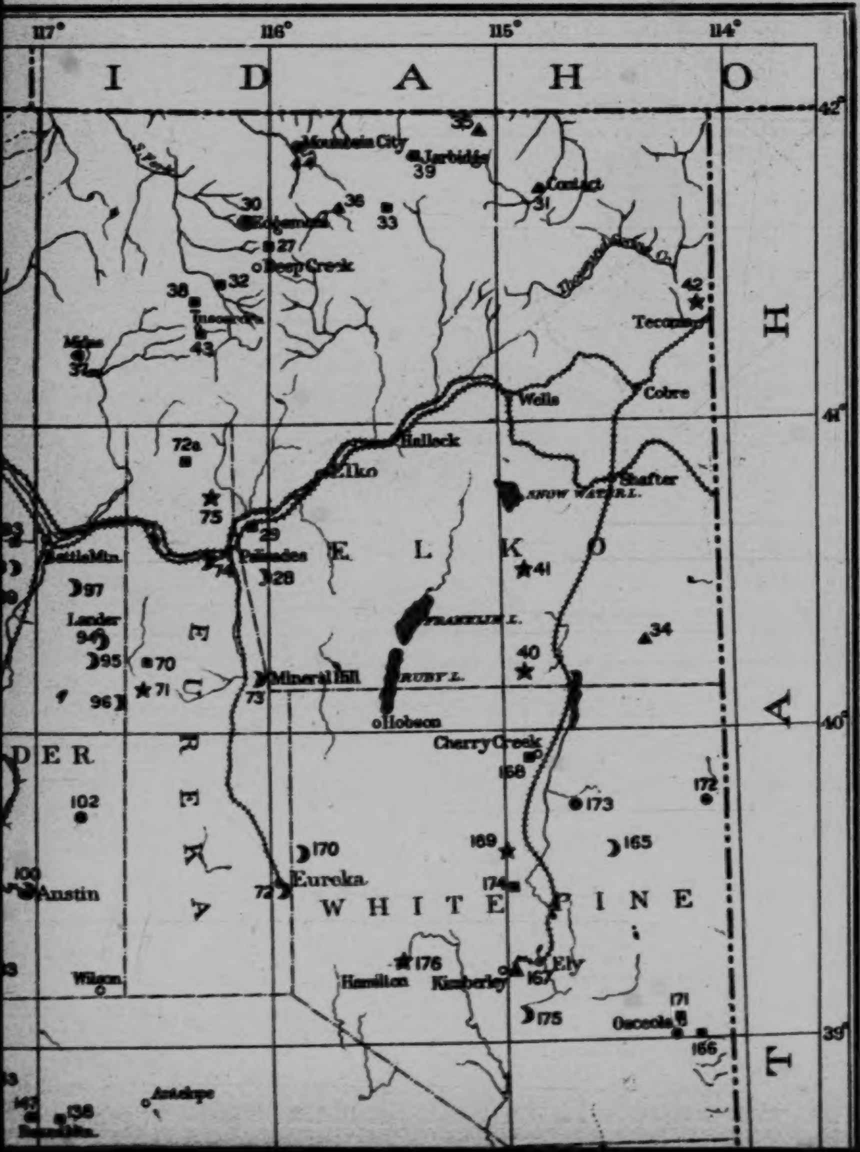
1. **Alpine.** Ag, Au.
    79 miles W. Fallon, S. P. R. R.
2. **Bernice.** Au, Ag, Sb.
    60 miles ENE. Fallon, 75 miles SE. Lovelocks, S. P. R. R.
    Min. Res. 1892, p. 260.
    1906, p. 512.
3. **Boyer (Cottonwood Canyon).** Au, Ag, Ni, Co.
    65 miles SE. Lovelocks, S. P. R. R.
    Triassic sediments cut by diorite capped by Tertiary volcanics.
    Veins.
    Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 55-58.
    Min. Res. 1882, p. 404.
    1883-84, p. 539.
    1885, pp. 299, 361.
    1886, p. 171.
    1887, p. 109.
    1908, pt. 1, p. 470.

CHURCHILL COUNTY—Continued.

4. **Eagleville (Hot Springs).** Au, Ag.
   64 miles SE. Fallon, S. P. R. R.
   Min. Res. 1908, pt. 1, p. 470.
   Top. sheet Carson Sink.
5. **Eastgate.** Au, Ag.
   90 miles SE. Fallon, S. P. R. R.
   Min. Res. 1905, p. 266.
   1906, p. 293.
   1908, pt. 1, p. 470.
6. **Fairview.** Au, Ag.
   42 miles SSE. Fallon, S. P. R. R.
   Tertiary volcanics.
   Veins.
   Min. Res. 1905, p. 266.
   1906, p. 293.
   1907, pt. 1, pp. 344-345.
   1908, pt. 1, p. 471.
   1909, pt. 1, p. 394.
   Top. sheet Carson Sink.
7. **I. X. L.** Ag, Au.
   35 miles SE. Lovelocks, S. P. R. R.
   Min. Res. 1906, p. 293.
   Top. sheet Carson Sink.
8. **Jessup.** Au.
   35 miles S. Lovelocks, 10 miles NW. White Plains, S. P. R. R.
   Min. Res. 1908, pt. 1, p. 471.
   1909, pt. 1, p. 394.
   Top. sheet Carson Sink.
9. **West Gate.** Ag, Pb, Au.
   54 miles ESE. Fallon, S. P. R. R.
   Min. Res. 1905, p. 266.
   Top. sheet Carson Sink.
10. **White Cloud (Coppereid).** Cu (Zn, Fe).
    35 miles SE. Lovelocks, S. P. R. R.
    Triassic sediments cut by granite and diorite and capped by Tertiary volcanics.
    Replacements, contact metamorphic.
    Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 59-62.
    Min. Res. 1908, pt. 1, p. 472.
    1909, pt. 1, p. 394.
11. **White Plains.** Au, Ag.
    7 miles WSW. White Plains, 5 miles W. Huxley, S. P. R. R.
    Min. Res. 1908, pt. 1, p. 471.
    1909, pt. 1, p. 394.
    Top. sheet Carson Sink.
12. **Wonder (Hercules).** Ag, Au.
    40 miles ESE. Fallon, S. P. R. R.
    Tertiary volcanics.
    Veins.
    Min. Res. 1905, p. 266.
    1906, p. 293.
    1907, pt. 1, p. 345.
    1908, pt. 1, p. 471-472.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR


120°
119°
118°
117°
42°
41°
40°
39°
OREGON
HUMBOLDT
WASHOE
CHURCHILL
LANDER
LYON
DOUGLAS
CARSON
STOREY
CAL
92 Ashdown
79a
86
91a
88
87
84a
Quinn River
Little Humboldt River
Hausen
158a
88a Winnemucca
Golconda
81
76
79
89
78
Mill City
83
Marume
90
Humboldt House
91
93
98
99
82
Kennedy
84
80
160
Round Hole
157
Deep Hole
158
85
Lovelocks
Humboldt R.
WINNEMUCCA L.
77
8
Whiteplains
1
Lovelock
3
10
Bernice
2
7
164
Wadsworth
199
163
Derby
Reno
118
121
Hazen
Stillwater
101
1
100
Austin
Fallon
12
Wonder
Virginia City
Churchill
Fairview
6
9
5
103
4
Wabuska
Phonolite
62
Genoa
Minden
117
122
Schurz
53
46
Rawhide
141
154
143
126
Goldyke
147
WALKER L.
SOUTHERN PACIFIC


117°
116°
115°
114°
IDAHO
42°
41°
40°
39°
Mountain City
Jarbidge
Contact
Edgemont
Deep Creek
Tuscarora
Midas
Tecoma
Wells
Cobre
Halleck
Elko
Shafter
SNOW WATER L.
Palisades
Battle Mtn.
ELKO
Lander
FRANKLIN L.
RUBY L.
Mineral Hill
Hobson
Cherry Creek
EUREKA
WHITE PINE
Eureka
Austin
Ely
Kimberley
Hamilton
Osceola
Wilson
Antelope
UTAH

LIST OF MINING DISTRICTS

CHURCHILL COUNTY

1. Alpine
2. Bernice
3. Boyer (Cottonwood Canyon)
4. Eagleville (Hot Springs)
5. Eastgate
6. Fairview
7. I. X. L.
8. Jessup
9. West Gate
10. White Cloud (Coppereid)
11. White Plains
12. Wonder (Hercules)

CLARK COUNTY

13. Bunkerville (Copper King)
14. Crescent
15. Eldorado Canyon (Nelson)
16. Gold Butte
17. Great Eastern
18. Omitted
19. Logan (St. Thomas)
20. Lyons
21. Searchlight
22. Vincent (Railroad Pass)
23. Yellow Pine (Good Springs)

DOUGLAS COUNTY

24. Gardnerville
25. Red Canyon
26. Wellington

ELKO COUNTY

27. Aura (Columbia)
28. Bullion (Railroad)
29. Carlin
30. Centennial (Edgemont)
31. Contact
32. Cornucopia
33. Cornwall Basin (Charleston)
34. Dolly Varden
35. Elk Mountains
36. Gold Basin (Rowland)
37. Gold Circle (Midas, Summit)
38. Good Hope
39. Jarbidge
40. Ruby Valley
41. Spruce Mountains
42. Tecoma
43. Tuscarora
44. Van Dusen ([illegible]in City)

ESMERALDA AND MINERAL

91 Star (Rye Patch, Unionville)
91a. Varyville
92. Vicksburg (Ashdown)
92a. Winnemucca (Barrett Springs)

LANDER COUNTY

93. Battle Mountain
94. Bullion (Tenabo, Lander)
95. Campbell (Lander)
96. Cortez (Mill Canyon)
97. Dean (Lewis, Mud Springs)
98. Galena (Copper Basin, Bannock)
99. Kimberley (Hill Top)
100. Reese River (Austin)
101. Skookum
102. Spencer
103. Washington (Kingston)

LINCOLN COUNTY

104. Bristol
105. Chief
106. Comet
107. Eagle Valley (Fay, State Line)
108. Ferguson (Delamar)
109. Freiberg
110. Geyser
111. Highland Valley
112. Hiko
113. Jackrabbit
114. Lone Mountain
115. Patterson
116. Pioche

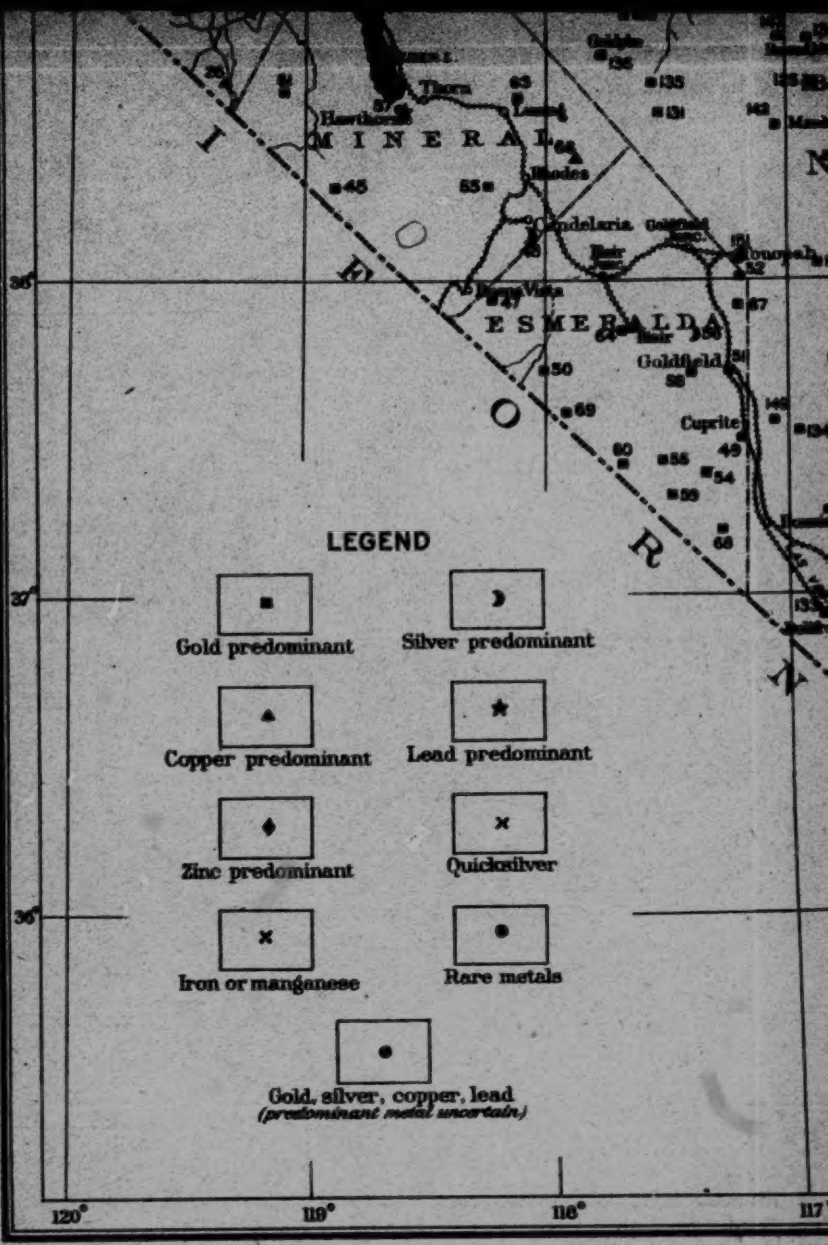
LYON COUNTY

117. Pine Nut
118. Ramsey
119. Red Mountain
120. Silver City (Palmyra, Devils Gate)
121. Tallapoosa
122. Yerington (Mason)

MINERAL COUNTY
(See Esmeralda)

NYE COUNTY

123. Bare Mountain
124. Bellehelen
125. Belmont (Philadelphia)
126. Berlin (Elsworth)
127. Big Dune
128. Blakes Camp
129. Bullfrog (Rhyolite)

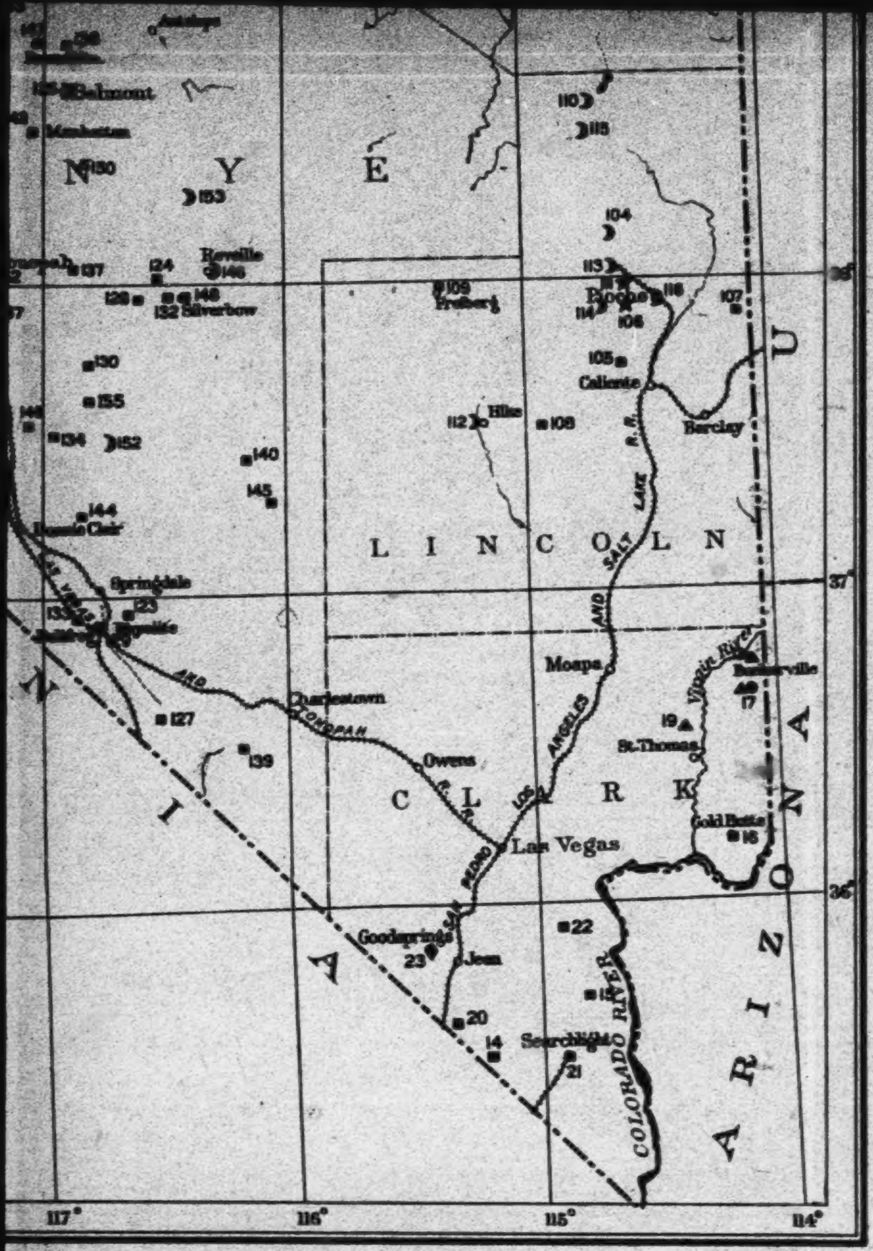

LEGEND
■ Gold predominant
☽ Silver predominant
▲ Copper predominant
★ Lead predominant
◆ Zinc predominant
× Quicksilver
× Iron or manganese
● Rare metals
● Gold, silver, copper, lead
(predominant metal uncertain)
MINERAL
ESMERALDA
Hawthorne
Thorn
Luning
Rhodes
Candelaria
Goldfield
Cuprite
Buena Vista
Tonopah
120°
119°
118°
117
38°
37°
36°

MAP OF NEVADA, SHOWING LOC

Scale

APPROXIMATELY 40

1912


N Y E
Belmont
Manhattan
Reveille
Silverbow
Freiberg
Pioche
Caliente
Barclay
Hiko
Beatty
Springdale
Rhyolite
Bullfrog
Charlestown
Owens
Moapa
St. Thomas
Bunkerville
Virgin River
Gold Butte
Las Vegas
Goodsprings
Jean
Searchlight
L I N C O L N
C L A R K
A R I Z O N A
U
COLORADO RIVER
SALT LAKE AND LOS ANGELES R.R.
SAN PEDRO
LAS VEGAS AND TONOPAH
37°
36°
117°
116°
115°
114°

- 43. Tuscarora
- 44. Van Dusen (Mountain City)

ESMERALDA AND MINERAL COUNTIES

- 45. Aurora (Cambridge)
- 46. Bovard
- 47. Buena Vista (Oneota)
- 48. Columbus (Candelaria)
- 49. Cuprite
- 50. Dyer
- 51. Goldfield
- 52. Gold Mountains
- 53. Granite
- 54. Hornsilver (Lime Point)
- 55. Lida (Tule Canyon)
- 56. Lone Mountain
- 57. Lucky Boy (Hawthorne)
- 58. Montezuma
- 59. Oriental Wash
- 60. Palmetto
- 61. Pine Grove
- 62. Rawhide (Regent)
- 63. Santa Fe (Luning)
- 64. Silver Peak (Mineral Ridge)
- 65. Silver Star (Mina, Marietta)
- 66. Sodaville (Pilot Mountains)
- 67. Southern Klondike
- 68. Tokop (Gold Mountains)
- 69. Windypah (Fesler)

EUREKA COUNTY

- 70. Mill Canyon (Buckhorn)
- 71. Cortez (Bullion Hill, Mt. Tenabo)
- 72. Eureka (Pinto, Prospect)
- 72a. Lynn
- 73. Mineral Hill
- 74. Safford
- 75. Schroeder (Maggie Creek)

HUMBOLDT COUNTY

- 76. Adelaide (Gold Run)
- 77. Browns
- 78. Cedar
- 79. Central (Chafey, Dun Glen)
- 79a. Disaster
- 80. Fitting (American Canyon)
- 81. Golconda
- 82. Gold Banks
- 83. Humboldt (Imlay)
- 84. Kennedy
- 84a. Jackson Creek
- 85. Lovelock
- 86. National
- 87. Spring Creek (Paradise Valley)
- 88. Rebel Creek
- 88a. Red Butte
- 89. Rosebud
- 90. Seven Troughs (Vernon, Mazuma, Farrell)

- 127. Big Dune
- 128. Blakes Camp
- 129. Bullfrog (Rhyolite)
- 130. Cactus Spring
- 131. Cloverdale
- 132. Eden
- 133. Gold Bar (Happy Hooligan)
- 134. Gold Crater
- 135. Golden
- 136. Goldyke (Atwood)
- 137. Hannapah
- 138. Jefferson Canyon (Concordia, Green Isle)
- 139. Johnnie
- 140. Kawich (Gold Reed)
- 141. Lodi Valley (Marble)
- 142. Manhattan
- 143. Millett
- 144. Monte Cristo
- 145. Oak Spring
- 146. Reveille
- 147. Round Mountain
- 148. Silverbow
- 149. Stonewall Mountain
- 150. Superior
- 151. Tonopah
- 152. Trappmans (Wilsons)
- 153. Tybo (Hot Creek)
- 154. Union (Ione)
- 155. Wellington (O'Briens)

STOREY COUNTY

- 156. Comstock

WASHOE COUNTY

- 157. Cottonwood (Round Hole)
- 158. Deep Hole
- 158a. Leadville
- 159. Peavine
- 160. Sheephead
- 161. Steamboat Springs
- 162. Washoe (Galena, Jumbo)
- 163. Wedekind
- 164. White Horse (Olinghouse)

WHITE PINE COUNTY

- 165. Aurum (Silver Canyon, Siegel)
- 166. Black Horse
- 167. Ely (Robinson)
- 168. Gold Canyon (Cherry Creek)
- 169. Hunter
- 170. Newark (Strawberry)
- 171. Osceola (Tungsten)
- 172. Regan
- 173. Schellbourne
- 174. Steptoe (Granite)
- 175. Ward (Taylor)
- 176. White Pine (Hamilton)

JULIUS BIEN CO. LITH. N.Y.

LOCATION OF MINING DISTRICTS

e $\frac{1}{2,500,000}$

Y 40 MILES TO 1 INCH

50 75 100 Miles

50 75 100 Kilometers

1912

CHURCHILL COUNTY—Continued.

12. **Wonder (Hercules)**—Continued.
Min. Res. 1909, pt. 1, p. 394.
Top. sheet Carson Sink.

CLARK COUNTY.

13. **Bunkerville (Copper King).** Cu, Au, Ag.
38 miles ENE. Moapa, S. P. L. A. & S. L. R. R.
Paleozoic and Tertiary sediments cut by Tertiary lavas.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 131-132.
Min. Res. 1906, p. 560.
1907, pt. 1, p. 365.
1908, pt. 1, pp. 472, 736, 783.
1909, pt. 1, p. 395.
Top. sheet St. Thomas.

14. **Crescent.** Au, Ag, Pb.
6 miles E. Nipton, S. P. L. A. & S. L. R. R.
Pre-Cambrian granite, quartzite cut by acidic and basic dikes.
Veins.
Ransome, F. L., Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: Bull. 303, 1907, p. 79.
Min. Res. 1905, p. 270.
1906, pp. 296-297.
1907, pt. 1, pp. 365-366.
1908, pt. 1, p. 472.
1909, pt. 1, p. 395.

15. **Eldorado Canyon (Nelson).** Au, Ag.
24 miles NNE. Searchlight, B. & S. R. R.
Pre-Cambrian granite and gneiss cut by acidic intrusives and capped by Tertiary volcanics.
Veins.
Ransome, F. L., Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: Bull. 303, 1907, pp. 63-76.
Min. Res. 1905, p. 270.
1907, pt. 1, p. 366.
1908, pt. 1, p. 473.
1909, pt. 1, p. 395.
Top. sheet Camp Mohave.

6. **Gold Butte.** Au.
51 miles SE. Moapa, S. P. L. A. & S. L. R. R.
Pre-Cambrian complex cut by acidic and basic dikes.
Veins.
Min. Res. 1905, p. 270.
1906, p. 297.
1907, pt. 1, p. 367.
1908, pt. 1, p. 472.
1909, pt. 1, p. 395.
Top. sheet St. Thomas.

7. **Great Eastern.** Cu, Ni, Co, Pt.
28 miles E. Moapa, S. P. L. A. & S. L. R. R.
Pre-Cambrian gneiss and granite cut by acidic and basic dikes.
Disseminated.
Bancroft, H., Platinum in southeastern Nevada: Bull. 430, 1910, pp. 192-199.

CLARK COUNTY—Continued.

17. **Great Eastern**—Continued.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 131–132.
    Min. Res. 1908, pt. 1, p. 783.
    Top. sheet St. Thomas.
18. Omitted.
19. **Logan (St. Thomas).** Cu, Ag.
    26 miles SE. Moapa, S. P. L. A. & S. L. R. R.
    Paleozoic and Mesozoic sediments capped by Tertiary volcanics.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 136–138.
    Min. Res. 1902, p. 141.
    1908, pt. 1, p. 473.
    Top. sheet St. Thomas.
20. **Lyons.** Au.
    15 miles SE. Jean, S. P. L. A. & S. L. R. R.
    Granite.
    Veins.
    Min. Res. 1907, pt. 1, p. 367.
21. **Searchlight.** Au, Ag, Cu, Pb.
    Station B. & S. R. R.
    Pre-Cambrian complex cut by quartz monzonite and capped by Tertiary volcanics.
    Veins.
    Ransome, F. L., Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: Bull. 303, 1907, pp. 63–76.
    Min. Res. 1905, p. 270.
    1906, p. 296–297.
    1907, pt. 1, pp. 368–369.
    1908, pt. 1, p. 473–474.
    1909, pt. 1, pp. 395–396.
    Top. sheet Camp Mohave.
22. **Vincent (Railroad Pass).** Au, Ag.
    12 miles E. Erie, S. P. L. A. & S. L. R. R.
    Top. sheet Camp Mohave.
23. **Yellow Pine (Goodsprings).** Zn, Pb, Cu, Au, Ag.
    8 miles NW. Jean, S. P. L. A. & S. L. R. R.
    Paleozoic sediments, cut by dikes.
    Replacement.
    Bain, H. F., A Nevada zinc deposit: Bull. 285, 1906, pp. 166–169.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 164–180.
    Min. Res. 1905, p. 270.
    1906, pp. 296, 478.
    1907, pt. 1, p. 369.
    1908, pt. 1, p. 474.
    1909, pt. 1, pp. 396–397.

DOUGLAS COUNTY.

24. **Gardnerville.** Au. (D, Pl.)
    3 miles S. Minden, V. & T. R. R.
    Diorite, Tertiary volcanics and lake beds.
    Veins.

DOUGLAS COUNTY—Continued.

24. **Gardnerville**—Continued.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 120-126.
    Min. Res., 1905, p. 266.
    1907, pt. 1, p. 346.
    1908, pt. 1, p. 475.
    Top. sheet Markleeville.
25. **Red Canyon.** Au, Ag, Pb.
    18 miles SE. Minden, V. & T. R. R.
    Granite and Tertiary volcanics.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 120-126.
    Min. Res. 1908, pt. 1, p. 475.
    Top. sheets Markleeville, Wellington.
26. **Wellington.** Cu.
    31 miles SSE. Minden, V. & T. R. R.
    Tertiary volcanics.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 120-126.
    Min. Res. 1908, pt. 1, p. 475.
    Top. sheet Wellington.

ELKO COUNTY.

27. **Aura (Columbia).** Au, Ag (Pb, Zn).
    79 miles NNW. Elko, S. P. R. R.
    Paleozoic sediments cut by granodiorite.
    Veins.
    Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 71-74.
    Min. Res. 1906, p. 293.
    1907, pt. 1, p. 346.
    1909, pt. 1, p. 398.
28. **Bullion (Railroad).** Ag, Au, Cu, Pb, Zn.
    27 miles SSW. Elko, 12 miles SE. Palisade, S. P. R. R., W. P. R. R.
    Paleozoic sediments cut by granodiorite.
    Replacements, contact metamorphic, veins.
    Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 88-95.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 116.
    Min. Res. 1906, p. 293.
    1908, pt. 1, p. 477.
    1909, pt. 1, pp. 399-400.
29. **Carlin.** Au, Ag. (D, Pl.)
    Station S. P. R. R., W. P. R. R.
    Paleozoic sediments cut and capped by Tertiary volcanics.
    Veins, replacements.
    Min. Res. 1908, pt. 1, p. 476.
30. **Centennial (Edgemont).** Au, Ag (Pb).
    92 miles NNW. Elko, S. P. R. R., W. P. R. R.
    Paleozoic sediments.
    Veins.

ELKO COUNTY—Continued.

30. **Centennial (Edgemont)**—Continued.
    Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev : Bull. 408, 1910, pp. 75–79.
    Min. Res. 1905, p. 266.
    1906, p. 293.
    1907, pt. 1, p. 346.
    1908, pt. 1, p. 476.
    1909, pt. 1, p. 398.

31. **Contact.** Cu, Ag.
    89 miles NW. Tecoma, S. P. R. R.
    Paleozoic sediments cut by granite.
    Contact metamorphic, veins.
    Schrader, F. C., A reconnaissance of the Jarbidge, Contact, and Elk Mountain mining districts, Elko County, Nev.: Bull. 497, 1912.
    Min. Res. 1908, pt. 1, p. 476.
    1909, pt. 1, p. 398.

32. **Cornucopia.** Au, Ag.
    58 miles NNW. Elko, S. P. R. R., W. P. R. R.
    Tertiary volcanics.
    Veins.
    Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, p. 63.

33. **Cornwall Basin (Charleston).** Au, Cu.
    95 miles NNE. Elko, 50 miles NNW. Deeth, S. P. R. R., W. P. R. R.
    Paleozoic sediments cut by granite.
    Contact metamorphic, veins.
    Min. Res. 1908, pt. 1, p. 476.

34. **Dolly Varden.** Cu, Pb, Ag.
    20 miles E. Mizpah, N. N. R. R.
    Min. Res. 1908, pt. 1, p. 476.
    1909, pt. 1, p. 398.

35. **Elk Mountain.** Cu, Au, Sb.
    90 miles SSE. Twin Falls, Idaho, O. S. L. R. R.
    Paleozoic sediments cut by granite.
    Contact metamorphic.
    Schrader, F. C., A reconnaissance of the Jarbidge, Contact, and Elk Mountain mining districts, Elko County, Nev.: Bull. 497, 1912.

36. **Gold Basin (Rowland).** Cu, Au.
    85 miles S. Twin Falls, Idaho, O. S. L. R. R.

37. **Gold Circle (Midas, Summit).** Au, Ag.
    48 miles ENE. Golconda, S. P. R. R., W. P. R. R.
    Tertiary volcanics.
    Veins.
    Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 48–57.
    Min. Res. 1907, pt. 1, p. 348.
    1908, pt. 1, p. 477.
    1909, pt. 1, p. 399.

38. **Good Hope.** Au, Ag.
    55 miles NW. Elko, S. P. R. R., W. P. R. R.
    Tertiary volcanics.
    Veins.
    Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, p. 65.

ELKO COUNTY—Continued.

39. **Jarbidge.** Au, Ag.
95 miles S. Twin Falls, Idaho, O. S. L. R. R.; 74 miles N. Elko, S. P. R. R., W. P. R. R.
Tertiary volcanics.
Veins.
Schrader, F. C., A reconnaissance of the Jarbidge, Contact, and Elk Mountain mining districts, Elko County, Nev.: Bull. 497, 1912.
Min. Res. 1909, pt. 1, p. 399.

40. **Ruby Valley.** Pb, Ag.
15 miles W. Currie, N. N. R. R.
Min. Res. 1908, pt. 1, p. 477.

41. **Spruce Mountains.** Pb, Cu, Ag, Au.
58 miles SE. Wells, S. P. R. R.; 15 miles NW. Mizpah, N. N. R. R.; 15 miles S. Jasper, W. P. R. R.
Paleozoic sediments cut by rhyolite.
Replacements.
Min. Res. 1905, p. 266.
1906, p. 293.
1907, pt. 1, p. 347.
1908, pt. 1, p. 477.
1909, pt. 1, p. 400.

42. **Tecoma.** Pb, Ag, Cu, Au.
10 miles NNE. Tecoma, S. P. R. R.
Min. Res. 1908, pt. 1, p. 477.
1909, pt. 1, p. 400.

43. **Tuscarora.** Au, Ag.
50 miles NW. Elko, S. P. R. R., W. P. R. R.
Tertiary volcanics.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 57–62.
Min. Res. 1905, p. 266.
1906, p. 293.
1907, pt. 1, p. 347.
1908, pt. 1, p. 478.
1909, pt. 1, p. 400.

44. **Van Dusen (Mountain City).** Au, Ag (Pb, Zn).
102 miles N. Elko, S. P. R. R., W. P. R. R.
Paleozoic sediments cut by granodiorite and capped by Tertiary volcanics.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 80–84.
Min. Res. 1905, p. 266.
1906, pp. 293, 346.
1907, pt. 1, p. 476.

ESMERALDA AND MINERAL COUNTIES.

45. **Aurora (Cambridge).** Au, Ag.
37 miles SW. Thorne, S. P. R. R
Tertiary volcanics.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 117–118.
Min. Res. 1905, p. 267.

45. **Aurora (Cambridge)**—Continued.
  Min. Res. 1906, p. 294.
    1907, pt. 1, p. 349.
    1908, pt. 1, p. 479.
    1909, pt. 1, pp. 401-402.
  Top. sheet Hawthorne.

46. **Bovard.** Au, Ag.
  28 miles E. Schurz, S. P. R. R.
  Tertiary volcanics.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 106-107.
  Min. Res. 1908, pt. 1, p. 485.
  Top. sheet Hawthorne.

47. **Buena Vista (Oneota).** Au, Ag, Pb, Cu, Zn.
  Station, S. P. R. R.
  Tertiary volcanics.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208. 1903, pp. 206-212.
  Min. Res. 1905, p. 268.
    1907, pt. 1, p. 349.
    1908, pt. 1, p. 479.
    1909, pt. 1, p. 402.

48. **Columbus (Candelaria).** Ag, Au, Pb.
  Station, S. P. R. R.
  Paleozoic sediments, Tertiary volcanics.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 113-114.
  Min. Res. 1906, p. 294.
    1909, pt. 1, p. 406.
  Top. sheet Hawthorne.

49. **Cuprite.** Au, Ag.
  Station, B. G. R. R.
  Cambrian sediments cut by dikes of diorite and Tertiary volcanics.
  Veins and replacements.
  Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 59-61; A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 46, 69-71.
  Min. Res. 1908, pt. 1, p. 483.
  Top. sheet Lida.

50. **Dyer.** Au, Ag.
  28 miles S. Coaldale. T. & G. R. R.
  Paleozoic sediments cut by granite.
  Veins.
  Spurr, J. E., Ore deposits of the Silver Peak quadrangle, Nevada: Bull. 225, 1904, p. 115; P. P. 55, 1906, pp. 84-85.
  Top. sheet Silver Peak.

51. **Goldfield.** Au, Ag.
  Station, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
  Tertiary volcanics underlain by Cambrian sediments cut by granite.
  Veins, replacements.

ESMERALDA AND MINERAL COUNTIES—Continued.

51. **Goldfield**—Continued.
Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 28, 32–34, 71–76, 107.
Ransome, F. L., Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: Bull. 303, 1907, pp. 7–39.
——— The geology and ore deposits of Goldfield, Nev.: P. P. 66, 1909.
Spurr, J. E., Notes on the geology of the Goldfields district, Nevada: Bull. 225, 1904, pp. 118–119.
——— The ores of Goldfield, Nev.: Bull. 260, 1905, pp. 132–139.
Min. Res. 1905, p. 267.
1906, pp. 293–294.
1907, pt. 1, pp. 349–353, 391–394.
1908, pt. 1, pp. 479–482, 714.
1909, pt. 1, pp. 402–405.
Top. sheets Lida, Goldfield special.

52. **Gold Mountains**. Au, Ag.
7 miles S. Tonopah, T. & G. R. R.
Tertiary volcanics.
Veins.
Spurr, J. E., Ore deposits of Tonopah and neighboring districts, Nevada: Bull. 213, 1903, p. 87.
Top. sheet Lida.

53. **Granite**. Au, Cu.
8 miles W. Schurz, S. P. R. R.
Granite capped by Tertiary volcanics.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 115, 117, 118.
Min. Res. 1907, pt. 1, p. 355.
Top. sheet Hawthorne.

54. **Hornsilver (Lime Point)**. Au, Ag, Pb.
16 miles SW. Cuprite, B. G. R. R.
Granite, Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 62.
Ransome, F. L., The Hornsilver district, Nevada: Bull. 380, 1909, pp. 41–43.
Min. Res. 1907, pt. 1, p. 354.
1908, pt. 1, p. 483.
1909, pt. 1, p. 405.
Top. sheet Lida.

55. **Lida (Tule Canyon)**. Au, Ag, Pb, Cu.
30 miles SW. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Cambrian sediments cut by quartz monzonite, and capped by Tertiary volcanics.
Veins and impregnations.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 61–62.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 25, 31, 45, 57, 60–65.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 184–186.
Min. Res. 1906, p. 294.
1907, pt. 1, p. 354.

55. **Lida (Tule Canyon)**—Continued.
Min. Res. 1908, pt. 1, p. 483.
1909, pt. 1, p. 405.
Top. sheet Lida.

56. **Lone Mountains.** Ag, Pb, Cu, Au.
14 miles NNW. Goldfield, T. & G. R. R.
Cambrian sediments cut by granite and diorite, capped by Tertiary volcanics.
Veins and replacements.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 57–58.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 28, 31, 46, 51–55.
Spurr, J. E., Ore deposits of the Silver Peak quadrangle, Nevada: Bull. 225, 1904, pp. 114–115; P. P. 55, 1905, pp. 75–83.
Min. Res. 1906, p. 294.
1908, pt. 1, p. 483.
1909, pt. 1, p. 405.
Top. sheet Lida.

57. **Lucky Boy (Hawthorne).** Pb, Ag.
7 miles SW. Thorne, S. P. R. R.
Cambrian sediments cut by granite and diorite.
Veins.
Min. Res. 1907, pt. 1, p. 353.
1908, pt. 1, pp. 482, 483.
1909, pt. 1, p. 405.
Top. sheet Hawthorne.

58. **Montezuma.** Au, Ag, Pb, Cu.
7 miles W. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Cambrian sediments cut by granite and diorite and capped by Tertiary volcanics.
Veins and replacements.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 58–59.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 63–64.
Min. Res. 1905, pp. 267–268.
1908, pt. 1, p. 484.
Top. sheet Lida.

59. **Oriental Wash.** Au, Ag, Cu.
45 miles SW. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Cambrian sediments cut by granite.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 64–65.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 45, 190–191.
Top. sheet Lida.

60. **Palmetto.** Au, Ag, Pb.
45 miles SW. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Paleozoic sediments cut by granite.
Veins, contact metamorphic.
Spurr, J. E., Ore deposits of the Silver Peak quadrangle, Nevada: Bull. 225, 1904, p. 116; P. P. 55, 1905, pp. 92–96.
Min. Res. 1907, pt. 1, p. 355.
1908, pt. 1, p. 484.
Top. sheet Silver Peak.

ESMERALDA AND MINERAL COUNTIES—Continued.

61. **Pine Grove.** Au, Ag.
30 miles S. Yerington, N. C. B. R. R.
Min. Res. 1907, pt. 1, p. 359.
1908, pt. 1, p. 484.
1909, pt. 1, p. 406.
Top. sheet Hawthorne.

62. **Rawhide (Regent).** Au, Ag.
28 miles E. Schurz, S. P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1907, pt. 1, p. 356.
1908, pt. 1, pp. 484–485.
1909, pt. 1, p. 406.
Top. sheet Hawthorne.

63. **Santa Fe (Luning).** Au, Cu, Ag, Pb, Sb.
Station S. P. R. R.
Min. Res. 1882, p. 230.
1908, pt. 1, p. 484.
1909, pt. 1, pp. 406–407.
Top. sheet Hawthorne.

64. **Silver Peak (Mineral Ridge).** Au, Ag.
Blair station, S. P. R. R.
Paleozoic sediments cut by granite and diorite, capped by Tertiary volcanics.
Veins.
Spurr, J. E., Ore deposits of Tonopah and neighboring districts, Nevada: Bull. 213, 1902, pp. 85–86.
——— Ore deposits of the Silver Peak quadrangle, Nevada: Bull. 225, 1904, pp. 112–114; P. P. 55, 1905, pp. 34–74.
——— Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 184–186.
Min. Res. 1905, p. 268.
1906, p. 294.
1907, pt. 1, pp. 354–355.
1908, pt. 1, p. 486.
1909, pt. 1, p. 407.
Top. sheet Silver Peak.

65. **Silver Star (Mina, Marietta).** Au, Cu, Ag, Pb.
10 miles W. Mina, S. P. R. R.
Min. Res. 1905, p. 268.
1906, p. 294.
1907, pt. 1, p. 354.
1908, pt. 1, pp. 484, 486.
1909, pt. 1, p. 407.
Top. sheet Hawthorne.

66. **Sodaville (Pilot Mountains).** Cu.
18 miles E. Sodaville, S. P. R. R.
Tertiary sediments cut by granite and capped by basalt.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 103–105.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 116.
Min. Res. 1882, p. 230.

ESMERALDA AND MINERAL COUNTIES—Continued.

66. **Sodaville (Pilot Mountains)**—Continued.
Min. Res. 1898 (Twentieth Ann. Rept., pt. 6), p. 185.
1904, p. 375.
1905, p. 268.
1908, pt. 1, p. 484.
Top. sheet Tonopah.

67. **Southern Klondike.** Au, Ag, Pb.
14 miles S. Tonopah, T. & G. R. R.
Pre-Cambrian sediments cut by granite and capped by Tertiary volcanics.
Veins.
Spurr, J. E., Ore deposits of Tonopah and neighboring districts, Nevada: Bull. 213, 1903, pp. 86-87.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 58.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 28, 32, 33, 44-49, 77-81.
Min. Res. 1905, p. 268.
1906, p. 284.
1909, pt. 1, p. 405.
Top. sheet Lida.

68. **Tokop (Gold Mountains).** Au, Ag, Cu.
15 miles W. Bonnie Clare, B. G. R. R., L. V. & T. R. R.
Cambrian sediments cut by granite and capped by Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 63-64.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 188-189.
Ransome, F. L., Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: Bull. 303, 1907, pp. 80-81.
Min. Res. 1905, p. 267.
1906, p. 482.
1909, pt. 1, p. 405.
Top. sheet Lida.

69. **Windypah (Fesler).** Au, Ag.
25 miles SW. Blair, S. P. R. R.
Paleozoic sediments cut by granite.
Veins.
Spurr, J. E., Ore deposits of the Silver Peak quadrangle, Nevada: Bull. 225, 1904, pp. 115-116; P. P. 55, 1905, pp. 85-92.
Top. sheet Silver Peak.

EUREKA COUNTY.

70. **Mill Canyon (Buckhorn).** Au.
35 miles SSW. Palisade, S. P. R. R., W. P. R. R.
Granodiorite.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, p. 106.
Min. Res. 1909, pt. 1, p. 408.

71. **Cortez (Bullion Hill, Mount Tenabo).** Pb, Ag, Au, Cu, Zn.
30 miles S. Beowawe, S. P. R. R., W. P. R. R.
Paleozoic sediments cut by granite and porphyries and capped by Tertiary volcanics.
Replacements, veins.

EUREKA COUNTY—Continued.

71. **Cortez (Bullion Hill, Mount Tenabo)**—Continued.

Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 100-110.

Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 116.

Min. Res. 1905, p. 269.
1906, p. 295.
1907, pt. 1, p. 358.
1908, pt. 1, p. 487.
1909, pt. 1, p. 408.

72. **Eureka (Pinto, Prospect, Ruby Hill).** Ag, Pb, Au, Cu, Zn, Fe.

Station E. & P. R. R.

Paleozoic sediments, granite porphyry, rhyolite.

Replacements, veins.

Curtis, J. S., Abstract of report on the mining geology of the Eureka district, Nevada: Fourth Ann. Rept., 1884, pp. 221-251.

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Hague, A., Abstract of the report on the geology of the Eureka district, Nevada: Third Ann. Rept., 1883, pp. 237-290.

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Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 274.

Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 81-84.

Walcott, C. D., Paleontology of the Eureka district: M. VIII, 1884.

Min. Res. 1882, p. 309.
1883-84, pp. 418-419, 462-473.
1885, p. 250.
1886, p. 143.
1887, p. 104.
1888, p. 86.
1905, p. 268.
1906, pp. 295, 450.
1907, pt. 1, p. 357.
1908, pt. 1, p. 487.
1909, pt. 1, p. 409.

72a. **Lynn.** Au.

20 miles NW. Carlin, S. P. R. R., W. P. R. R.

Tertiary volcanics.

Veins.

Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, p. 87.

Min. Res. 1909, pt. 1, p. 409.

73. **Mineral Hill.** Ag, Pb, Au.

5 miles SW. Mineral, E. & P. R. R.

Paleozoic sediments cut by porphyry.

Replacements.

Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 95-99.

Min. Res. 1905, pp. 268-269.
1908, pt. 1, p. 287.

74. **Safford.** Ag.

6 miles W. Palisade, S. P. R. R., W. P. R. R.

Tertiary volcanics.

EUREKA COUNTY—Continued.

74. **Safford**—Continued.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 110-112.
Min. Res. 1909, pt. 1, p. 410.

75. **Schroeder (Maggie Creek).** Pb, Ag, Au, Sb.
9-15 miles NNW. Carlin, S. P. R. R., W. P. R. R.
Paleozoic sediments and Tertiary volcanics.
Veins, replacements.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 86-88.
Min. Res. 1908, pt. 1, p. 487.
1909, pt. 1, p. 410.

HUMBOLDT COUNTY.

76. **Adelaide (Gold Run).** Cu, Ag, Au.
11 miles S. Golconda, S. P. R. R., W. P. R. R.
Triassic sediments cut by granite.
Replacement, contact metamorphic.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 62-63.
Min. Res. 1899 (Twentieth Ann. Rept., pt. 6), p. 185.
1907, pt. 1, p. 359.
1908, pt. 1, pp. 489-490.
1909, pt. 1, p. 412.

77. **Browns.** W.
2 miles W. Browns station, S. P. R. R.
Sediments cut by granite.
Contact metamorphic.
Min. Res. 1908, pt. 1, p. 724.
1909, pt. 1, p. 580.

78. **Cedar.** Pb, Ag.
20 miles W. Mill City, S. P. R. R., W. P. R. R.

79. **Central (Chafey, Dun Glen).** Au, Ag, Pb.
10 miles E. Mill City, S. P. R. R., W. P. R. R.
Jurassic sediments, Tertiary volcanics.
Veins.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 49-52.
Min. Res. 1908, pt. 1, p. 490.
1909, pt. 1, p. 411.

79a. **Disaster.** Au. (D, Pl.)
100 miles NNW. Winnemucca, S. P. R. R., W. P. R. R., W. P. R. R.

80. **Fitting (American Canyon).** Au, Ag, Hg (Pb, Cu, Zn).
28 miles NE. Lovelocks, S. P. R. R., W. P. R. R.
Triassic sediments cut by granodiorite, capped by Tertiary volcanics.
Veins.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, p. 35.
Min. Res. 1883-84, p. 643.
1905, p. 269.
1907, pt. 1, p. 359.
1908, pt. 1, p. 489.
1909, pt. 1, pp. 411-412, 554.

HUMBOLDT COUNTY—Continued.

81. **Golconda.** Mn.
  2 miles ESE. Golconda, S. P. R. R., W. P. R. R.
  Tertiary sediments and volcanics.
  Bedded lenses.
  Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 270; Bull. 427, 1910, pp. 153–157.
  Min. Res. 1885, p. 349.
    1886, p. 197.
    1907, pt. 1, p. 100.

82. **Gold Banks.** Au, Ag.
  40 miles SSE. Winnemucca, S. P. R. R., W. P. R. R.
  Triassic sediments cut by granite.
  Veins.
  Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, p. 48.
  Min. Res. 1907, pt. 1, p. 362.
    1908, pt. 1, p. 489.

83. **Humboldt (Imlay).** Ag, Au, Cu, Pb.
  8 miles S. Mill City, S. P. R. R.
  Jurassic sediments cut by granite and capped by Tertiary volcanics.
  Veins.
  Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, p. 46.
  Min. Res. 1905, p. 269.
    1907, pt. 1, p. 360.
    1908, pt. 1, p. 490.

84. **Kennedy.** Au, Ag.
  70 miles S. Winnemucca, S. P. R. R., W. P. R. R.
  Triassic sediments cut by granite and capped by Tertiary volcanics.
  Veins.
  Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 52–54.
  Min. Res. 1905, p. 269.
    1907, pt. 1, p. 362.
    1908, pt. 1, p. 490.
    1909, pt. 1, p. 412.

84a. **Jackson Creek.** Cu.
  75 miles NNW. Humboldt, S. P. R. R.; 30 miles N. Sulphur, W. P. R. R.
  Granite and limestone.
  Veins, contact metamorphic.

85. **Lovelocks.** Ag, Au.
  10 miles W. Lovelocks, S. P. R. R.
  Min. Res. 1908, pt. 1, p. 490.

86. **National.** Au, Ag, Sb.
  74 miles N. Winnemucca, S. P. R. R., W. P. R. R.
  Tertiary volcanics.
  Veins.
  Min. Res. 1908, pt. 1, p. 490.
    1909, pt. 1, p. 412.
  Top. sheet Paradise.

87. **Spring City (Paradise Valley).** Au, Ag.
  44 miles NNE. Winnemucca, S. P. R. R., W. P. R. R.
  Mesozoic metamorphosed slates.

HUMBOLDT COUNTY—Continued.

87. **Spring City (Paradise Valley)**—Continued.
Veins.
Min. Res. 1907, pt. 1, p. 362.
1908, pt. 1, p. 490.
1909, pt. 1, p. 412.
Top. sheet Paradise.

88. **Rebel Creek (Willow Creek).** Au, Ag, Cu.
54 miles N. Winnemucca, S. P. R. R., W. P. R. R.
Mesozoic metamorphosed slates, granite.
Veins.
Min. Res. 1907, pt. 1, p. 362.
1908, pt. 1, p. 490.
Top. sheet Paradise.

88a. **Red Butte.** Cu.
45 miles NW. Humboldt, S. P. R. R.; 15 miles N. Sulphur, W. P. R. R.
Gabbro and aplite.
Veins, disseminations.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, p. 27.

89. **Rosebud.** Ag, Au, sulphur.
28 miles NW. Humboldt House, 35 miles NW. Mill City, S. P. R. R.; 52 miles W. Winnemucca, S. P. R. R., W. P. R. R.; Sulphur station, W. P. R. R.
Jurassic sediments and Tertiary volcanics.
Veins.
Adams, G. I., The Rabbit Hole sulphur mines near Humboldt House, Nev.: Bull. 225, 1904, pp. 497–500.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 25–26.
Min. Res. 1906, p. 295.
1907, pt. 1, p. 362.
1908, pt. 1, p. 490.
1909, pt. 1, p. 413.

90. **Seven Troughs (Vernon, Mazuma, Farrel).** Au, Ag, Cu, Pb.
32 miles NW. Lovelocks, S. P. R. R.
Jurassic sediments cut by granite and capped by Tertiary volcanics.
Veins.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 14–25.
Min. Res. 1906, p. 295.
1907, pt. 1, pp. 360–362.
1908, pt. 1, pp. 490–491.
1909, pt. 1, p. 413.

91. **Star (Rye Patch, Unionville).** Ag, Pb, Au, Cu, Zn, Sb, Ni, Co.
14 miles S. Mill City, 10 miles E. Rye Patch, S. P. R. R.
Triassic sediments and Tertiary volcanics.
Replacements and veins.
Ransome, F. L., Notes on some mining districts in Humboldt County, Nev.: Bull. 414, 1909, pp. 41–49.
Min. Res. 1905, p. 269.
1907, pt. 1, p. 360.
1908, pt. 1, p. 489.
1909, pt. 1, pp. 413–414.

HUMBOLDT COUNTY—Continued.

91a. **Varyville.** Au. (Pl.)
120 miles NW. Winnemucca, S. P. R. R., W. P. R. R.

92. **Vicksburg (Ashdown).** Au, Ag.
120 miles NW. Winnemucca, S. P. R. R., W. P. R. R.
Min. Res. 1905, p. 269.
1906, p. 295.
1908, pt. 1, p. 489.
1909, pt. 1, p. 411.
Top. sheet Disaster.

92a. **Winnemucca (Barrett Springs).** Au, Ag.
5 miles WNW. Winnemucca, S. P. R. R., W. P. R. R.
Mesozoic metamorphosed slates, diorite.
Veins.
Min. Res. 1909, pt. 1, p. 414.

LANDER COUNTY.

93. **Battle Mountain.** Au, Ag.
10 miles W. Battle Mountain, S. P. R. R., W. P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1908, pt. 1, p. 492.
1909, pt. 1, p. 415.

94. **Bullion (Tenabo, Lander).** Ag, Au, Pb, Cu.
30 miles SE. Battle Mountain, 25 miles SE. Beowawe, S. P. R. R., W. P. R. R.
Paleozoic sediments capped by Tertiary volcanics.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 118–119.
Min. Res. 1906, p. 296.
1907, pt. 1, p. 364.
1909, pt. 1, p. 415.

95. **Campbell (Lander).** Ag, Pb, Cu.
38 miles SE. Battle Mountain, S. P. R. R., W. P. R. R.
Paleozoic sediments capped by Tertiary volcanics.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 118–119.
Min. Res. 1906, p. 286.

96. **Cortez (Mill Canyon).** Ag, Au, Cu, Pb.
35 miles S. Beowawe, S. P. R. R., W. P. R. R.
Paleozoic sediments cut by acidic and basic rocks.
Replacements, veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 100–106.
Min. Res. 1908, pt. 1, p. 492.
1909, pt. 1, p. 415.

97. **Dean (Lewis, Mud Springs).** Ag, Au.
18–22 miles SE. Battle Mountain, S. P. R. R., W. P. R. R.
Paleozoic sediments cut by granite and andesite.
Veins.
Emmons, W. H., A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nev.: Bull. 408, 1910, pp. 119–126.
Min. Res. 1909, pt. 1, p. 415.

LANDER COUNTY—Continued.

98. **Galena (Copper Basin, Bannock).** Ag, Au, Pb, Cu, Zn.
12 miles SW. Battle Mountain, S. P. R. R., W. P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1882, pp. 230, 438–439.
1883–84, p. 643.
1905, p. 269.
1907, pt. 1, p. 364.
1908, pt. 1, p. 492.
1909, pt. 1, p. 415.

99. **Kimberley (Hill Top).** Cu, Pb, Au, Ag.
20 miles SW. Battle Mountain, S. P. R. R., W. P. R. R.
Paleozoic sediments cut by diorite and andesite.
Veins.
Min. Res. 1909, pt. 1, p. 415.

100. **Reese River (Austin).** Ag, Au, Pb, Cu, Zn.
Station N. C. R. R.
Paleozoic sediments cut by granite and capped by Tertiary volcanics.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 93–97.
Min. Res. 1905, p. 269.
1906, p. 296.
1907, pt. 1, p. 363.
1908, pt. 1, p. 492.
1909, pt. 1, p. 414.

101. **Skookum.** Ag, Au.
9 miles NW. Austin, N. C. R. R.
Paleozoic sediments cut by granite.
Veins, contact metamorphic.
Min. Res. 1907, pt. 1, p. 363.

102. **Spencer.**
NE. Austin, N. C. R. R.
Paleozoic sediments, Tertiary volcanics.

103. **Washington (Kingston).** Au (?).
30 miles SSW. Austin, N. C. R. R.
Paleozoic sediments cut by granite.
Min. Res. 1909, pt. 1, p. 415.

LINCOLN COUNTY.

104. **Bristol.** Ag, Cu, Au, Pb.
20 miles NW. Pioche, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by rhyolite.
Replacements and veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, p. 42.
Min. Res. 1908, pt. 1, pp. 493–494.
1909, pt. 1, pp. 416–417.

105. **Chief.** Au.
8 miles NNW. Caliente, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by basic dikes.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 37–48.

LINCOLN COUNTY—Continued.

105. **Chief**—Continued.
    Min. Res. 1909, pt. 1, p. 416.
    Top. sheet Pioche.

106. **Comet.** Pb, Ag.
    12 miles W. Pioche, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by porphyry.
    Veins and replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 151–152.
    Top. sheet Pioche.

107. **Eagle Valley (Fay, State Line).** Au, Ag.
    21 miles NW. Modena, Utah, S. P. L. A. & S. L. R. R.
    Tertiary volcanics.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 134–135.
    Min. Res. 1905, p. 270.
    1907, pt. 1, pp. 366–367.
    1908, pt. 1, p. 493.
    1909, pt. 1, p. 416.
    Top. sheet Pioche.

108. **Ferguson (Delamar).** Au, Ag.
    30 miles WSW. Caliente, S. P. L. A. & S. L. R. R.
    Paleozoic quartzite cut by basic dikes.
    Replacements and veins.
    Min. Res. 1905, p. 270.
    1906, p. 296.
    1908, pt. 1, p. 493.
    1909, pt. 1, p. 416.
    Top. sheet Pioche.

109. **Freiberg.** Au, Ag.
    75 miles W. Pioche, S. P. L. A. & S. L. R. R.
    Rhyolite (?).
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 76–77.

110. **Geyser.** Ag, Au, Pb.
    81 miles S. Ely, N. N. R. R.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 47–54.

111. **Highland Valley.** Pb, Ag, Au, Cu.
    7 miles WNW. Pioche, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by dikes.
    Veins, replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 38–45.
    Min. Res. 1908, pt. 1, p. 493.
    1909, pt. 1, pp. 416–417.
    Top. sheet Pioche.

112. **Hiko.** Ag, Pb.
    60 miles W. Caliente, S. P. L. A. & S. L. R. R.
    Paleozoic sediments.
    Veins (?).
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 152–153.

LINCOLN COUNTY—Continued.

113. **Jackrabbit.** Ag, Au, Pb.
15 miles NW. Pioche, S. P. L. A. & S. L. R. R.
Paleozoic sediments.
Replacements.
Min. Res. 1907, pt. 1, p. 368.
1908, pt. 1, p. 493.
1909, pt. 1, pp. 416–417.

114. **Lone Mountain.** Ag, Pb.
16 miles W. Pioche, S. P. L. A. & S. L. R. R.
Paleozoic sediments (?).
Veins, replacements.
Top. sheet Pioche.

115. **Patterson.** Ag.
50 miles SSE. Ely, N. N. R. R.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, p. 40.

116. **Pioche.** Ag, Pb, Au, Cu, Zn, Mn.
Station S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by quartz porphyry.
Replacement, veins.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 274.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 38–45.
Min. Res. 1905, p. 270.
1906, p. 296.
1907, pt. 1, p. 367.
1908, pt. 1, p. 493.
1909, pt. 1, pp. 416–417.
Top. sheet Pioche.

LYON COUNTY.

117. **Pine Nut.** Pb, Ag (Au).
22 miles SW. Wabuska, S. P. R. R.
Tertiary volcanics.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 120–123.
Top. sheet Wabuska.

118. **Ramsey.** Au, Ag.
17 miles S. Clarks, S. P. R. R.
Tertiary volcanics.
Veins.
Hill, J. M., Notes on the economic geology of the Ramsey, Talapoosa, and White Horse mining districts in Lyon and Washoe counties, Nev.: Bull. 470, 1911, pp. 106–107.
Min. Res. 1907, pt. 1, p. 370.
1908, pt. 1, p. 494.
1909, pt. 1, p. 418.
Top. sheet Wabuska.

119. **Red Mountain.** Fe.
17 miles NE. Dayton, S. P. R. R.
Triassic sediments cut by granite.

LYON COUNTY—Continued.

119. **Red Mountain**—Continued.
    Contact metamorphic.
    Harder, E. C., Iron ores near Dayton, Nev.: Bull. 430, 1910, pp. 240–246.
    Top. sheet Wabuska.

120. **Silver City (Palmyra, Devils Gate).** Au, Ag.
    Station V. & T. R. R
    Tertiary volcanics.
    Veins.
    Min. Res. 1905, p. 271.
    1906, p. 297.
    1907, pt. 1, p. 359.
    1908, pt. 1, p. 494.
    1909, pt. 1, p. 417.
    Top. sheet Carson.

121. **Talapoosa.** Au, Ag (Cu).
    18 miles S. Fernley, S. P. R. R.
    Tertiary volcanics.
    Veins.
    Hill, J. M., Notes on the economic geology of the Ramsey, Talapoosa, and White Horse mining districts, in Lyon and Washoe counties Nev.: Bull. 470, 1911, p. 108.
    Top. sheet Wabuska.

122. **Yerington (Mason).** Cu (Pb, Au, Ag).
    Station N. C. B. R. R.
    Triassic sediments cut by granite.
    Contact metamorphic.
    Ransome, F. L., The Yerington copper district, Nevada: Bull. 380, 1909, pp. 99–119.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, p. 117.
    Min. Res. 1905, p. 271.
    1906, pp. 297, 401.
    1907, pt. 1, pp. 611, 370.
    1908, pt. 1, pp. 213, 494.
    1909, pt. 1, pp. 408, 418.
    Top. sheet Wellington.

MINERAL COUNTY. (See ESMERALDA.)

NYE COUNTY.

123. **Bare Mountain.** Au, Hg.
    7 miles NE. Beatty, B. G. R. R.
    Paleozoic sediments cut by monzonite porphyry and Tertiary volcanics.
    Veins.
    Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 71–72.
    ——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 153–157.
    Top. sheet Furnace Creek.

124. **Bellehelen.** Au, Ag.
    50 miles E. Tonopah, T. & G. R. R.
    Tertiary volcanics.
    Veins.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, p. 181.

124. **Bellehelen**—Continued.
Min. Res. 1907, pt. 1, p. 372.
1908, pt. 1, p. 496.
1909, pt. 1, p. 419.

125. **Belmont (Philadelphia).** Ag, Pb, Cu (Hg).
72 miles NNE. Tonopah, T. & G. R. R.
Paleozoic sediments cut by granite.
Veins.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 385.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 89–93.

126. **Berlin (Elsworth).** Au, Ag (Cu, Pb, Zn).
40 miles NE. Luning, S. P. R. R.
Tertiary volcanics.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 99–103.
Min. Res. 1907, pt. 1, p. 372.
1908, pt. 1, p. 496.
1909, pt. 1, p. 419.
Top. sheet Tonopah.

127. **Big Dune.** Au, Cu.
8 miles E. Leeland, T. & T. R. R.
Cambrian sediments.
Veins.
Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 175.
Top. sheet Furnace Creek.

128. **Blakes Camp.** Au, Ag.
50 miles NE. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 66.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 110.

129. **Bullfrog (Rhyolite).** Au, Ag.
Station B. G. R. R., T. & G. R. R.
Tertiary volcanics.
Veins.
Ransome, F. L., Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: Bull. 303, 1907, pp. 40–62.
——— Geology and ore deposits of the Bullfrog district, Nevada: Bull. 407, 1910.
Min. Res. 1905, p. 272.
1906, p. 298.
1907, pt. 1, pp. 372, 394–398.
1908, pt. 1, pp. 496–497.
1909, pt. 1, pp. 419–420.
Top. sheets Furnace Creek, Bullfrog special.

130. **Cactus Springs.** Au.
24 miles E. Goldfield, B. G. R. R., L. V. & T. R. R.

130. **Cactus Springs**—Continued.
Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 68.
——— A geologic reconnaissance of southwestern Nevada and eastern California: Bull. 308, 1907, pp. 46, 89, 92–96.
Min. Res. 1909, pt. 1, p. 420.

131. **Cloverdale.** Au, Ag.
32 miles E. Luning, S. P. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1905, p. 275.
1908, pt. 1, p. 497.
1909, pt. 1, p. 420.
Top. sheet Tonopah.

132. **Eden.** Au.
70 miles E. Tonopah, T. & G. R. R.
Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 66.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 110–111.
Top. sheet Kawich.

133. **Gold Bar (Happy Hooligan).** Au, Ag.
3 miles W. Bullfrog, B. G. R. R., L. V. & T. R. R.
Paleozoic sediments, Tertiary rhyolites.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 72.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, p. 178.
Top. sheet Furnace Creek.

134. **Gold Crater.** Au, Cu.
27 miles SE. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 69–70.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 139–140.
Top. sheet Kawich.

135. **Golden.** Au, Ag.
40 miles NE. Sodaville, S. P. R. R.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 93–97.
Min. Res. 1907, pt. 1, p. 373.

136. **Goldyke (Atwood).** Au, Ag, W, Cu, Pb.
32 miles NE. Luning, S. P. R. R.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 93–97.

NYE COUNTY—Continued.

136. **Goldyke (Atwood)**—Continued.
Min. Res. 1907, pt. 1, pp. 372–373.
1908, pt. 1, pp. 497, 724.
1909, pt. 1, p. 420.
Top. sheet Tonopah.

137. **Hannapah.** Au, Ag.
20 miles E. Tonopah, T. & G. R. R.
Tertiary volcanics.
Veins.
Spurr, J. E., Ore deposits of Tonopah and neighboring districts, Nevada: Bull. 213, 1903, p. 87.
Min. Res. 1908, pt. 1, p. 499.
1909, pt. 1, p. 420.

138. **Jefferson Canyon (Concordia, Green Isle).** Au, Ag.
70 miles NNE. Tonopah, T. & G. R. R.
Paleozoic sediments cut by porphyry.
Veins.

139. **Johnnie.** Au, Ag.
14 miles SSE. Amargosa, L. V. & T. R. R.
Paleozoic sediments.
Veins.
Min. Res. 1907, pt. 1, p. 374.
1908, pt. 1, p. 497.
1909, pt. 1, pp. 420–421.
Top. sheet Furnace Creek.

140. **Kawich (Gold Reed).** Au.
54 miles E. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.
Monzonite porphyry and rhyolite.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 67–68.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 108–113.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, p. 181.
Top. sheet Kawich.

141. **Lodi Valley (Marble).** Ag, Au, Pb.
63 miles NNE. Luning, S. P. R. R.
Min. Res. 1905, p. 252.
1906, p. 299.
1908, pt. 1, p. 497.
1909, pt. 1, p. 421.
Top. sheet Tonopah.

142. **Manhattan.** Au, Ag. (D, Pl.)
53 miles N. Tonopah, T. & G. R. R.
Paleozoic sediments cut by granite and diorite and capped by Tertiary volcanics.
Veins and replacements.
Emmons, W. H., and Garrey, G. H., Notes on the Manhattan district: Bull. 303, 1907, pp. 84–92.
Min. Res. 1905, p. 272.
1906, p. 299.
1907, pt. 1, pp. 374, 398.

NYE COUNTY—Continued.

142. **Manhattan**—Continued.
Min. Res. 1908, pt. 1, p. 498.
1909, pt. 1, p. 421.
Top. sheet Tonopah.

143. **Milletts.** Au, Ag, Pb.
105 miles N. Tonopah, T. & G. R. R.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 93-97.
Min. Res. 1908, pt. 1, p. 498.
1909, pt. 1, p. 421.
Top. sheet Tonopah.

144. **Monte Cristo.** Au.
20 miles ENE. Bonnie Claire, T. & G. R. R.
Paleozoic sediments cut by granite and Tertiary volcanics.
Veins.
Ball, S. H., A geologic reconnaissance of southwestern Nevada and eastern California: Bull. 308, 1907, pp. 141-142.
Top. sheet Kawich.

145. **Oak Springs.** Au.
80 miles SW. Caliente, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by granite and capped by Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 70-71.
——— A geologic reconnaissance of southwestern Nevada and eastern California: Bull. 308, 1907, pp. 44, 45, 122-130.
Top. sheet Kawich.

146. **Reveille.** Ag, Pb.
67 miles E. Tonopah, T. & G. R. R.
Paleozoic sediments cut by dikes.
Veins.
Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 114-117.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 161-163.
Min. Res. 1905, p. 272.
1908, pt. 1, p. 498.

147. **Round Mountain.** Au, Ag, W. (D, Pl.)
74 miles N. Tonopah, T. & G. R. R.
Tertiary volcanics.
Veins, wash gravels.
Ransome, F. L., Round Mountain, Nev.: Bull. 380, 1909, pp. 44-47.
Min. Res. 1906, pp. 298-299.
1907, pt. 1, pp. 373-374.
1908, pt. 1, pp. 498, 499, 724.
1909, pt. 1, p. 421.
Top. sheet Tonopah.

148. **Silverbow.** Au, Ag.
46 miles E. Goldfield, T. & G. R. R.
Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 65-66.

148. **Silverbow**—Continued.

Ball, S. H., A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 109–110.

Min. Res. 1907, pt. 1, p. 374.
1908, pt. 1, p. 499.

Top. sheet Kawich.

149. **Stonewall Mountain.** Au.

17 miles SSE. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.

Paleozoic sediments cut by granite, capped by Tertiary volcanics.

Veins.

Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 70.

——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 28, 32, 33, 46, 47, 48, 83, 84–87, 88–99, 109, 133, 136.

Top. sheet Lida.

150. **Superior.** Cu.

35 miles NNE. Tonopah, T. & G. R. R.

151. **Tonopah.** Ag, Au, W.

Station T. & G. R. R.

Tertiary volcanics.

Veins.

Spurr, J. E., Ore deposits of Tonopah and neighboring districts, Nevada: Bull. 213, 1903, pp. 81–87.

——— The ore deposits of Tonopah, Nev. (preliminary report): Bull. 219, 1903.

——— Preliminary report on the ore deposits of Tonopah, Nev.: Bull. 225, 1904, pp. 88–110.

——— Developments at Tonopah, Nev., during 1904: Bull. 260, 1905, pp. 140–144.

——— Geology of the Tonopah mining district, Nevada: P. P. 42, 1905.

Min. Res. 1905, p. 272.
1906, p. 298.
1907, pt. 1, pp. 375–378, 385–391.
1908, pt. 1, pp. 499–501.
1909, pt. 1, pp. 422–424.

Top. sheets Tonopah, Tonopah special.

152. **Trappmans (Wilsons).** Ag, Au.

34 miles SE. Goldfield, T. & G. R. R., B. G. R. R., L. V. & T. R. R.

Granite and Tertiary volcanics.

Veins.

Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, pp. 68–69.

——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 138–139.

Top. sheet Kawich.

153. **Tybo (Hot Creek).** Ag, Au, Pb.

111 miles ENE. Tonopah, T. & G. R. R.

Paleozoic sediments and Tertiary volcanics.

Veins, replacements.

Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 84–87.

Min. Res. 1908, pt. 1, p. 497.

NYE COUNTY—Continued.

154. **Union (Ione).** Hg, Au, Ag, Pb.
60 miles S. Austin, N. C. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1908, pt. 1, p. 692.
1909, pt. 1, pp. 420, 555.
Top. sheet Tonopah.

155. **Wellington (O'Briens).** Au, Ag.
20 miles E. Cuprite, B. G. R. R.
Tertiary volcanics.
Veins.
Ball, S. H., Notes on the ore deposits of southwestern Nevada and eastern California: Bull. 285, 1906, p. 68.
——— A geologic reconnaissance in southwestern Nevada and eastern California: Bull. 308, 1907, pp. 46, 48, 95.
Top. sheet Kawich.

STOREY COUNTY.

156. **Comstock.** Au, Ag.
Virginia City station, V. & T. R. R.
Diorite and Tertiary volcanics.
Veins.
Becker, G. F., Geology of the Comstock lode and the Washoe district: M. III, 1882.
Lord, E., Comstock mining and miners: M. IV, 1883.
Min. Res. 1905, pp. 272–273.
1906, p. 299.
1907, pt. 1, pp. 378–381.
1908, pt. 1, pp. 501–502.
1909, pt. 1, pp. 425–426.
Top. sheet Carson.

WASHOE COUNTY.

157. **Cottonwood (Round Hole).** Au.
10 miles NW. Puna, W. P. R. R.
Min. Res. 1908, pt. 1, p. 503.
Top. sheet Granite Range.

158. **Deep Hole.** Au.
Renard station, W. P. R. R.
Min. Res. 1908, pt. 1, p. 503.
Top. sheet Granite Range.

158a. **Leadville.** Pb, Ag.
100 miles NE. Amedee, Cal., N. C. & O. R. R.; 50 miles NNW. Phil, W. P. R. R.
Tertiary volcanics.
Veins.

159. **Peavine.** Au (Ag, Cu).
10 miles N. Reno, S. P. R. R., V. & T. R. R.
Schists and granite.
Veins.
Min. Res. 1905, p. 273.
1906, p. 299.
1907, pt. 1, p. 382.
1908, pt. 1, p. 503.

WASHOE COUNTY—Continued.

159. **Peavine**—Continued.
    Min. Res. 1909, pt. 1, p. 426.
    Top. sheet Reno.
160. **Sheephead.** Au.
    15 miles W. Renard, W. P. R. R.
    Min. Res. 1907, pt. 1, p. 382.
    Top. sheet Granite Range.
161. **Steamboat Springs.** Hg.
    Station V. & T. R. R.
    Tertiary volcanics.
    Impregnations.
    Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, pp. 331–353; Eighth Ann. Rept., 1889, p. 979.
162. **Washoe (Galena, Jumbo).** Pb, Au, Ag, Zn.
    5 miles W. Virginia City, V. & T. R. R.
    Granite.
    Veins.
    Becker, G. F., A summary of the geology of the Comstock lode and the Washoe district: Second Ann. Rept., 1882, pp. 291–330.
    Min. Res. 1906, p. 299.
        1907, pt. 1, p. 382.
        1909, pt. 1, p. 426.
    Top. sheet Carson.
163. **Wedekind.** Ag, Au.
    4 miles NE. Reno, S. P. R. R.
    Tertiary volcanics.
    Veins and replacements.
    Min. Res. 1909, pt. 1, p. 426.
    Top. sheet Reno.
164. **White Horse (Olinghouse).** Au, Ag.
    9 miles W. Wadsworth, S. P. R. R.
    Tertiary volcanics.
    Veins.
    Hill, J. M., Notes on the economic geology of the Ramsey, Talapoosa, and White Horse mining districts, in Lyon and Washoe counties, Nev · Bull. 470, 1911, pp. 104–106.
    Min. Res. 1905, p. 273.
        1906, pp. 299–300.
        1907, pt. 1, p. 382.
        1908, pt. 1, p. 503.
        1909, pt. 1, p. 426.
    Top. sheet Wadsworth.

WHITE PINE COUNTY.

165. **Aurum (Silver Canyon, Siegel).** Ag (Au).
    36 miles SE. Cherry Creek, 10 miles E. Melvin, N. N. R. R.
    Paleozoic sediments (?).
    Veins and replacements.
    Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 38–47.
    Min. Res. 1908, pt. 1, p. 383.
166. **Black Horse.** Au (Ag).
    49 miles SE. Ely, N. N. R. R.
    Paleozoic sediments cut by granite porphyry.

WHITE PINE COUNTY—Continued.

166. **Black Horse**—Continued.
  Veins.
  Min. Res. 1905, p. 274.
    1906, p. 300.
    1907, pt. 1, p. 383.
    1909, pt. 1, p. 428.

167. **Ely (Robinson).** Cu, Au, Ag, Pb.
  Station N. N. R. R.
  Paleozoic sediments cut by monzonite porphyry.
  Disseminated, veins, contact metamorphic.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 47–54.
  Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 116, 117.
  Min. Res. 1905, pp. 274, 355.
    1906, p. 300.
    1907, pt. 1, pp. 383–384, 612.
    1908, pt. 1, pp. 212–213, 504–505.
    1909, pt. 1, pp. 170, 428–429.
  Top. sheet Ely special.

168. **Gold Canyon (Cherry Creek).** Au, Ag.
  5 miles W. Cherry Creek, N. N. R. R.
  Paleozoic sediments.
  Veins.
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 47–54.
  Min. Res. 1905, p. 273.
    1906, p. 303.
    1907, pt. 1, p. 382.
    1908, pt. 1, p. 504.
    1909, pt. 1, p. 428.

169. **Hunter.** Pb, Cu, Ag.
  10 miles SW. Granite, N. N. R. R.
  Paleozoic sediments (?).
  Veins (?).
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 47–54.
  Min. Res. 1906, p. 300.

170. **Newark (Strawberry).** Ag, Pb, Cu, Au.
  29 miles NNE. Eureka, E. & P. R. R.
  Paleozoic sediments (?).
  Veins (?).
  Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 77–84.
  Min. Res. 1905, p. 274.
    1906, p. 300.
    1907, pt. 1, p. 384.
    1908, pt. 1, p. 505.

171. **Osceola (Tungsten).** Au, W.
  40 miles SE. Ely, N. N. R. R.
  Paleozoic sediments cut by granite porphyry.
  Veins.

WHITE PINE COUNTY—Continued.

171. **Osceola (Tungsten)**—Continued.

Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 25–36.

Weeks, F. B., An occurrence of tungsten ore in eastern Nevada: Twenty-first Ann. Rept., pt. 6, 1901, pp. 319–320.

——— Geology and mineral resources of the Osceola mining district, White Pine County, Nev.: Bull. 340, 1908, pp. 117–133.

——— Tungsten deposits in the Snake Range, White Pine County, eastern Nevada: Idem, pp. 263–270.

Min. Res. 1899 (Twenty-first Ann. Rept., pt. 6), pp. 301, 319–320.
1905, p. 274.
1907, pt. 1, p. 383.
1908, pt. 1, pp. 505, 725.
1909, pt. 1, pp. 430, 579–580.

172. **Regan.** W, Au.
50 miles E. Cherry Creek, N. N. R. R.
Granite and porphyry (?).
Veins.

173. **Schellbourne.**
18 miles SE. Cherry Creek, N. N. R. R.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 38–47.

174. **Steptoe (Granite).** Au, Ag, Pb.
5 miles W. Granite, N. N. R. R.
Paleozoic sediments.
Veins.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 47–54.
Min. Res. 1908, pt. 1, p. 504.
1909, pt. 1, p. 428.

175. **Ward (Taylor).** Ag, Pb.
16 miles S. Ely, N. N. R. R.
Paleozoic sediments cut by monzonite porphyry.
Veins, contact metamorphic.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 47–54.
Min. Res. 1907, pt. 1, p. 384.
1908, pt. 1, pp. 505–506.
1909, pt. 1, p. 430.

176. **White Pine (Hamilton).** Pb, Ag, Cu, Au, Zn.
30 miles W. Ely, N. N. R. R.
Paleozoic sediments cut by granodiorite and monzonite.
Veins, replacements.
Spurr, J. E., Geology of Nevada south of the fortieth parallel: Bull. 208, 1903, pp. 61–68.
Min. Res. 1905, pp. 273–274.
1906, p. 300.
1908, pt. 1, p. 505.
1909, pt. 1, p. 430.

NEW MEXICO.

In the State of New Mexico there are at the present time 15 counties in which mining is carried on. In these counties 85 mining districts are recognized by the United States Geological Survey. In 27 of these districts copper is the principal metal produced, in 26 gold predominates, in 16 silver, in 11 lead, in 2 zinc, and in 3 iron.

Distribution of the predominant metals produced in the mining districts of New Mexico.

County.	Gold.	Silver.	Copper.	Lead.	Zinc.	Iron.	Total
Bernalillo	....	....	1	....	....	....	1
Colfax	4	....	....	....	....	....	4
Dona Ana	2	....	1	2	....	....	5
Grant	2	8	5	4	....	1	20
Lincoln	4	1	1	....	....	....	6
Luna	....	1	....	3	1	....	5
Otero	1	....	2	....	....	....	3
Rio Arriba	1	....	3	....	....	....	4
Sandoval	1	....	2	....	....	....	3
San Miguel	1	....	3	....	....	....	4
Santa Fe	2	....	1	1	....	1	5
Sierra	2	5	1	....	....	....	8
Socorro	4	1	3	1	1	1	11
Taos	2	....	2	....	....	....	4
Valencia	....	....	2	....	....	....	2
	26	16	27	11	2	3	85

MINING DISTRICTS IN NEW MEXICO.

[See Pl. X. Additional references will be found in Mineral Resources for 1910 and 1911.]

BERNALILLO COUNTY.

1. **Tijeras Canyon.** Cu.
   18 miles NE. Albuquerque, A. T. & S. F. R. R.
   Granite.
   Veins.
   Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 163.
   Min. Res. 1905, p. 279.
   1909, pt. 1, p. 435.
   Top. sheet San Pedro.

COLFAX COUNTY.

2. **Cimarroncito.** Au.
   12 miles S. Ute Park, St. L. R. M. & P. R. R.
   Carboniferous and Cretaceous sediments cut by monzonite.
   Contact metamorphic.
   Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 105.
3. **Moreno (Elizabethtown).** Au, Ag, Cu. (D, Pl.)
   12 miles W. Ute Park, St. L. R. M. & P. R. R.
   Paleozoic and Cretaceous sediments cut by monzonite porphyry.
   Veins, contact metamorphic, wash gravels.
   Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 32, 36, 41, 51–54, 57–59, 60, 75, 92–105.
   Min. Res. 1905, p. 279.
   1906, p. 305.
   1907, pt. 1, p. 405.
   1908, pt. 1, p. 511.

COLFAX COUNTY—Continued.

4. **Ponil.** Au. (Pl.)
Station St. L. R. M. & P. R. R.
Wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 75, 92, 97.
Min. Res. 1905, p. 279.
1907, pt. 1, p. 405.

5. **Ute Creek (Baldy).** Au. (D, Pl.)
6 miles N. Ute Park, St. L. R. M. & P. R. R.
Paleozoic and Cretaceous sediments cut by monzonite.
Veins, wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 97, 101–105, 348.
Min. Res. 1906, p. 279.
1907, pt. 1, p. 405.
1908, pt. 1, p. 511.

DONA ANA COUNTY.

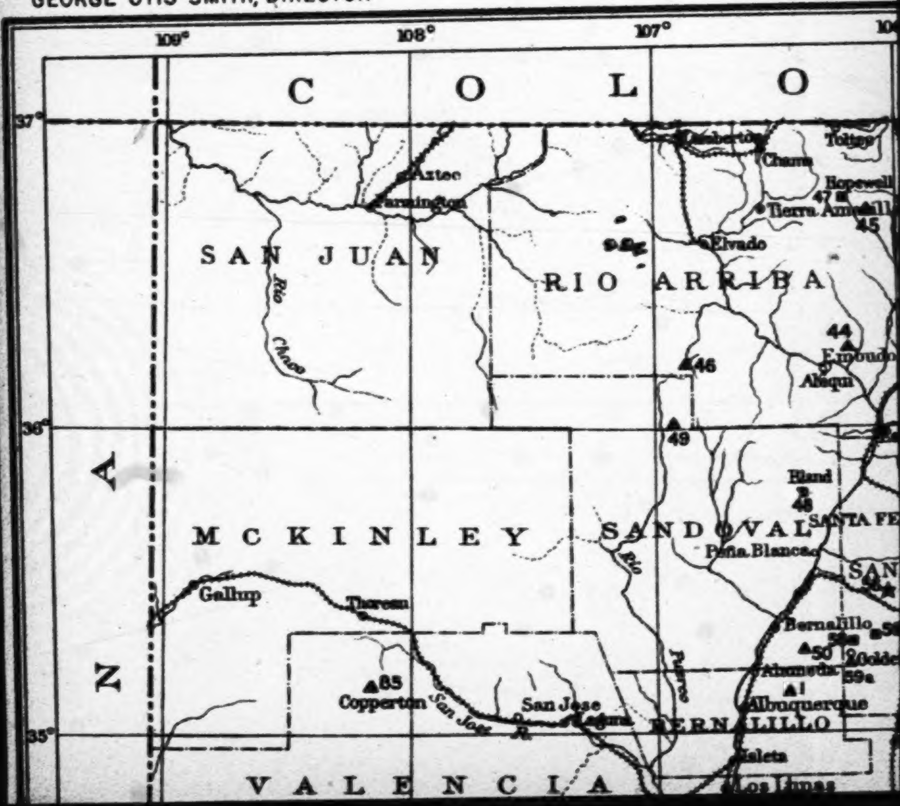
6. **Black Mountain (Kent).** Au, Ag.
25 miles NE. Las Cruces, A. T. & S. F. R. R.
Paleozoic sediments cut by monzonite.
Contact metamorphic, veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 86, 87, 209.
Min. Res. 1905, p. 279.
Top. sheet Las Cruces.

7. **Hembrillo.** Cu.
45 miles NNE. Las Cruces, A. T. & S. F. R. R.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 205.

8. **Modoc.** Pb, Ag.
20 miles W. Las Cruces, A. T. & S. F. R. R.
Paleozoic sediments cut by andesite.
Contact metamorphic.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51–53, 57, 58, 60–64, 205–213.
Min. Res. 1905, p. 279.
Top. sheet Las Cruces.

9. **Organ.** Pb, Ag, Cu.
15 miles NE. Las Cruces, A. T. & S. F. R. R., stage line.
Paleozoic sediments cut by quartz monzonite.
Veins, contact metamorphic, replacements.
Keyes, C. R., Geology and underground water conditions of the Jornada del Muerto, New Mexico: W. S. P. 123, 1905, p. 23.
Lindgren, W., and Graton, L. C., A reconnaissance of the mineral deposits in New Mexico: Bull. 285, 1906, pp. 74–86.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51–53, 57, 58, 60–64, 205–213.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1905, p. 279.
1906, p. 306.
1907, pt. 1, p. 405.
1908, pt. 1, p. 512.
1909, pt. 1, p. 436.
Top. sheet Las Cruces.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR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C O L O
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Aztec
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Rio Chaco
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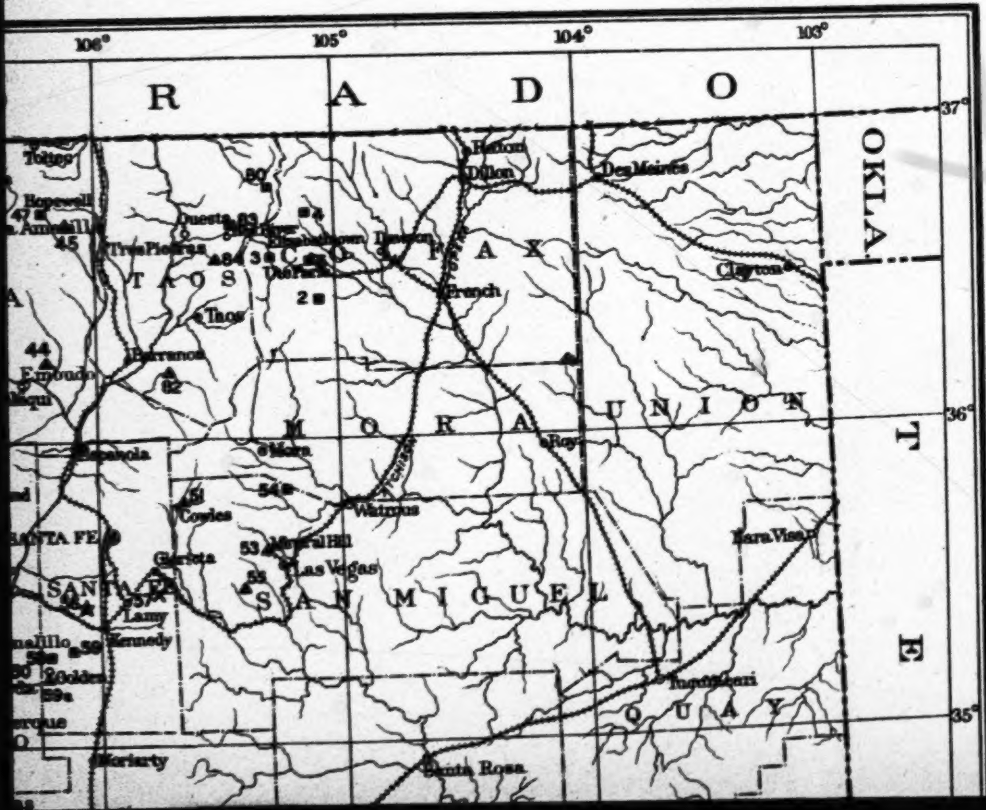
Dumberton
Chama
Toltec
Hopewell
47
Tierra Amarilla
45
Elvado
44
Embudo
Alcalde
46
49
Bland
48
SANTA FE
SANDOVAL
Peña Blanca
Bernalillo
50
Alameda
59a
Golden
Albuquerque
1
BERNALILLO
Isleta
Los Lunas
MCKINLEY
Gallup
Thoreau
65
Copperton
San Jose R.
San Jose
Laguna
Rio Puerco
VALENCIA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R A D O
OKLA.
T
E
COLFAX
TAOS
MORA
UNION
SAN MIGUEL
SANTA FE
QUAY
Raton
Dillon
Des Moines
Clayton
French
Questa
Taos
Barranca
Embudo
Española
Mora
Roy
Watrous
Cowles
Mineral Hill
Las Vegas
Glorieta
Lamy
Kennedy
Golden
Moriarty
Santa Rosa
Tucumcari
Nara Visa
Tres Piedras
Hopewell
Toltec
Ute Park
Elizabethtown
Dawson
1
2
3
4
44
45
47
51
53
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59a
62
80
83
84

LIST OF MINING DISTRICTS

BERNALILLO COUNTY

1. Tijeras Canyon

COLFAX COUNTY

2. Cimarroncito
3. Moreno (Elizabethtown)
4. Ponil
5. Ute Creek (Baldy)

DONA ANA COUNTY

6. Black Mountain (Kent)
7. Hembrillo
8. Modoc
9. Organ
10. Texas Creek

GRANT COUNTY

11. Apache No. 2 (Anderson)
12. Black Hawk
13. Burro Mountains (Cow Springs)
14. Carpenter
15. Central
16. Chloride Flat (Silver City)
17. Fierro
18. Georgetown (Mimbres)
19. Gold Hill
20. Granite Gap (San Simon)
21. Hachita (Eureka, Sylvanite)
22. Kimball (Steins Pass)

Lone Mountain

SANDOVAL COUNTY

48. Cochiti (Bland)
49. Cuba (Nacimiento Mountains)
50. Placitas

SAN MIGUEL COUNTY

51. Cooper (Pecos)
52. Omitted
53. Mineral Hill
54. Rociada
55. Tecolote (Salitre, San Pablo)

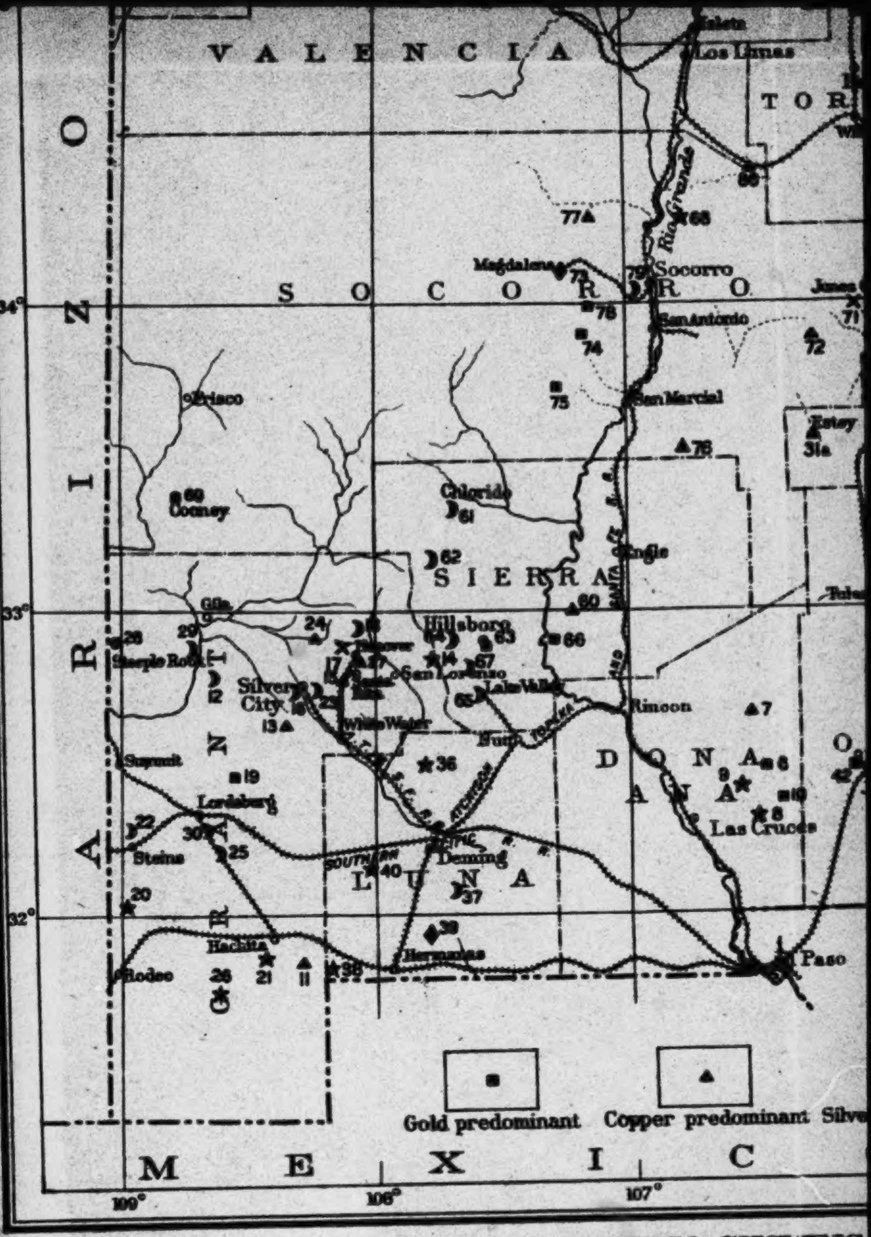
SANTA FE COUNTY

56. Cerrillos
57. Glorieta
58. New Placers
59. Old Placers (Ortiz, Dolores)

59a. San Pedro

SIERRA COUNTY

60. Caballos Mountains
61. Chloride (Apache, Cuchillo Negro)
62. Hermosa (Palomas)
63. Hillsboro (Las Animas)
64. Kingston (Black Range)


VALENCIA
Isleta
Los Lunas
TORRANCE
ARIZONA
SOCORRO
Rio Grande
Magdalena
Socorro
San Antonio
San Marcial
Frisco
Cooney
Chloride
SIERRA
Engle
Hillsboro
Kingston
Hanover
San Lorenzo
Lake Valley
Silver City
White Water
Rincon
Gila
Steeple Rock
Summit
Lordsburg
Steins
Deming
LUNA
DONA ANA
Las Cruces
Hachita
Rodeo
Hermanas
El Paso
GRANT
SOUTHERN PACIFIC
Jones
Estey
Tularosa
MEXICO
34°
33°
32°
109°
108°
107°
Gold predominant
Copper predominant
Silve

MAP OF NEW MEXICO, SHOWING

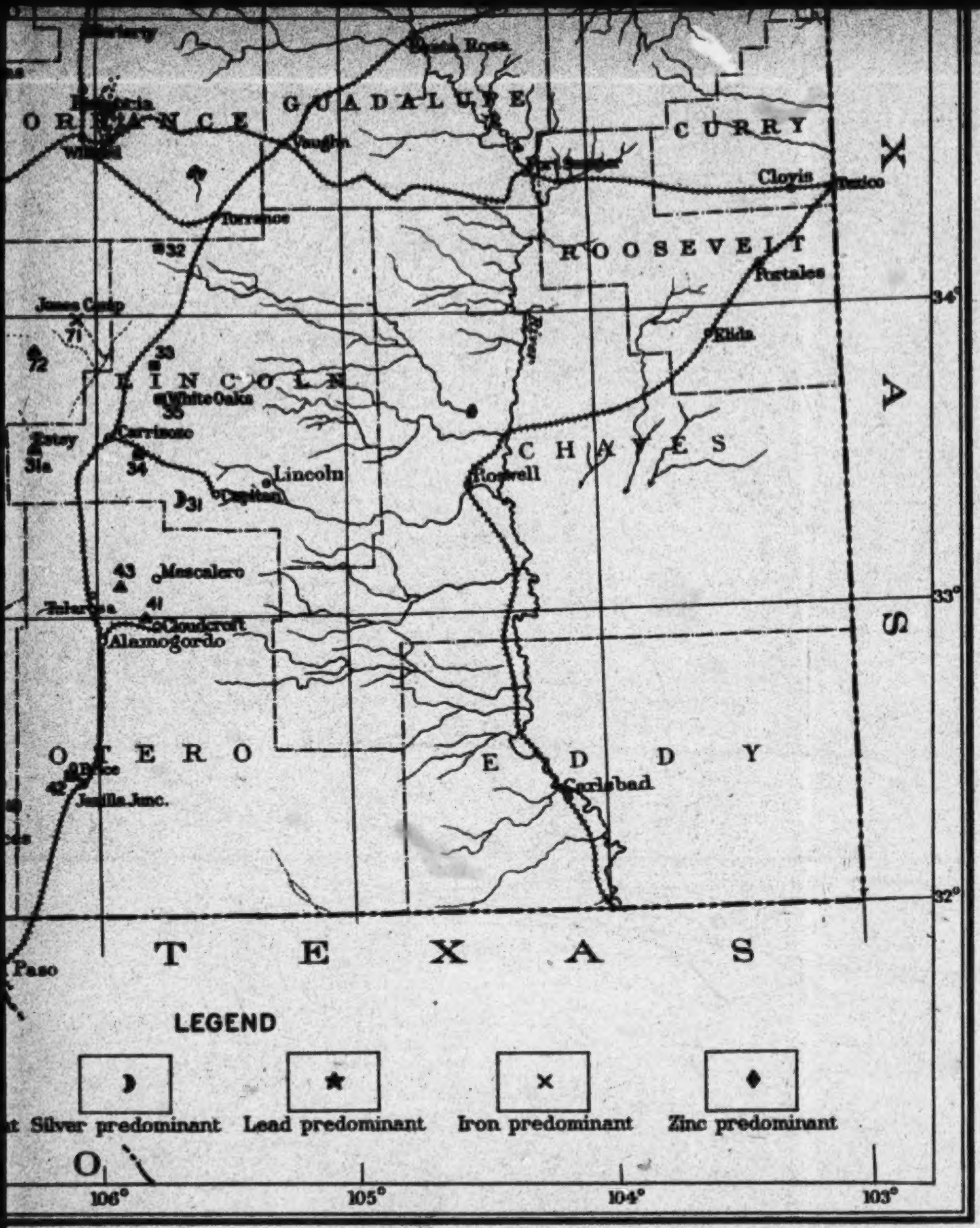
Scale

APPROXIMATELY 4

25 0 25

25 0 25

19


Moriarty
Santa Rosa
Estancia
TORRANCE
GUADALUPE
Willard
Vaughn
Fort Sumner
CURRY
Clovis
Texico
Torrance
32
ROOSEVELT
Portales
Jones Camp
71
72
33
River
Elida
LINCOLN
White Oaks
35
Carrizozo
Estey
31a
34
CHAVES
Lincoln
Roswell
Capitan
31
43
Mescalero
41
Tularosa
Cloudcroft
Alamogordo
OTERO
EDDY
Brice
42
Jarilla Junc.
Carlsbad
TEXAS
Paso
34°
33°
32°
LEGEND
Silver predominant
Lead predominant
Iron predominant
Zinc predominant
106°
105°
104°
103°
JULIUS BIEN CO. LITH. N.Y.

Granite Gap (San Simon)
21. Hachita (Eureka, Sylvanite)
22. Kimball (Steins Pass)
23. Lone Mountain
24. Pinos Altos
25. Pyramid (Lordsburg)
26. Red Hill
27. Santa Rita (Hanover)
28. Steeplerock
29. Telegraph
30. Virginia (Lordsburg)

LINCOLN COUNTY

31. Cedar Creek (Alto)
31a. Estey (Oscuro)
32. Gallinas
33. Jicarilla
34. Nogal (Bonita, Parsons)
35. Whiteoaks

LUNA COUNTY

36. Cooks Peak
37. Florida Mountains
38. Fremont
39. Tres Hermanas
40. Victorio (Gage)

OTERO COUNTY

41. Highrolls
42. Jarilla (Orogrande, Silver Hill, Brice)
43. Tularosa

RIO ARRIBA COUNTY

44. Abiquiu
45. Bromide
46. Gallina
47. Hopewell (Headstone)

62. Hermosa (Palomas)
63. Hillsboro (Las Animas)
64. Kingston (Black Range)
65. Lake Valley
66. Pittsburg (Shandon)
67. Tierra Blanca (Bromide No. 1)

SOCORRO COUNTY

68. Canyoncito
69. Cooney (Mogollon)
70. Omitted
71. Jones Camp
72. Hansonburg
73. Magdalena (Kelly)
74. Mill Canyon (Hop Canyon)
75. Rosedale
76. San Andres
77. San Lorenzo
78. Silver Mountain (Water Canyon)
79. Socorro

TAOS COUNTY

80. Anchor (La Belle)
81. Omitted
82. Picuris (Copper Hill)
83. Red River
84. Twining (Arroyo Hondo)

VALENCIA COUNTY

85. Copperton (Zuni Mountains)
86. Manzano

WING LOCATION OF MINING DISTRICTS

ale $\frac{1}{2,500,000}$

TELY 40 MILES TO 1 INCH

25 50 75 100 Miles

25 50 75 100 Kilometers

1912

DONA ANA COUNTY—Continued.

10. **Texas Creek.** Au, Ag.
21 miles NE. Las Cruces, A. T. & S. F. R. R., stage.
Quartz monzonite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51–53, 57, 58, 60, 64, 205–213.
Min. Res. 1905, p. 279.
1906, p. 512.

GRANT COUNTY.

11. **Apache No. 2 (Anderson).** Cu (Au, Ag, W).
6 miles SSE. Hachita, E. P. & S. W. R. R.
Paleozoic sediments cut by quartz monzonite.
Contact metamorphic.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51–53, 55–56, 78, 343–344.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1906, p. 307.
1907, pt. 1, p. 407.
1908, pt. 1, pp. 513–726.
1909, pt. 1, p. 437.

12. **Black Hawk.** Ag.
15 miles W. Silver City, A. T. & S. F. R. R.
Gneiss cut by monzonite and diorite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 57–58, 61, 324–325.

13. **Burro Mountains (Cow Springs).** Cu.
12 miles SW. Silver City, A. T. & S. F. R. R., stage.
Pre-Cambrian granite and diorite cut by monzonite.
Veins, replacements, and stockworks.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 17, 19, 27, 28, 38, 61, 62, 321–324.
Paige, S., Metalliferous ore deposits near the Burro Mountains, Grant County, N. Mex.: Bull. 470, 1911, pp. 131–150.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1905, p. 280.
1906, pp. 305, 307, 402.
1907, pt. 1, pp. 407, 613.
1908, pt. 1, pp. 214, 513.
1909, pt. 1, pp. 170, 437.
Top. sheet Silver City.

14. **Carpenter.** Pb, Zn.
12 miles E. Fierro, A. T. & S. F R. R.
Paleozoic sediments cut by granite porphyry and capped by rhyolite and andesite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 37, 64, 65, 218, 268, 272.

15. **Central.** Cu, Pb, Ag (Zn).
7 miles E. Silver City, A. T. & S. F. R. R., stage.
Cretaceous sediments cut by quartz monzonite porphyry.

GRANT COUNTY—Continued.

15. **Central**—Continued.
  Veins.
  Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 57, 61, 317–318.
  Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
  Min. Res. 1905, p. 280.
  1906, p. 307.
  1907, pt. 1, pp. 407–408.
  1908, pt. 1, p. 513.
  1909, pt. 1, p. 437.
  Top. sheets Silver City, Santa Rita special.

16. **Chloride Flat (Silver City).** Ag, Pb.
  Station A. T. & S. F. R. R.
  Paleozoic sediments cut by quartz monzonite porphyry.
  Replacements.
  Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 26, 38, 63–65, 301–305.
  Min. Res. 1905, p. 280.
  1906, p. 307.
  1907, pt. 1, p. 408.
  1908, pt. 1, p. 514.
  1909, pt. 1, p. 437.
  Top. sheet Silver City.

17. **Fierro.** Fe, Cu.
  Station A. T. & S. F. R. R.
  Paleozoic sediments cut by quartz monzonite porphyry.
  Contact metamorphic.
  Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 47, 55, 296, 306, 312–313.
  Paige, S., The Hanover iron-ore deposits, New Mexico: Bull. 380, 1909, pp. 199–214.
  Min. Res. 1907, pt. 1, pp. 407–408.
  1908, pt. 1, p. 513.
  Top. sheet Silver City.

18. **Georgetown (Mimbres).** Ag (Pb).
  11½ miles NE. Santa Rita, A. T. & S. F. R. R., stage.
  Paleozoic sediments cut by quartz monzonite porphyry.
  Veins and replacements.
  Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 30, 38, 62, 63–65, 306–307, 318–319.
  Top. sheet Silver City.

19. **Gold Hill.** Au.
  12 miles NE. Lordsburg, S. P. R. R.
  Pre-Cambrian gneiss cut by granite and diabase.
  Veins.
  Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 49, 50–51, 86, 326–327.

20. **Granite Gap (San Simon).** Pb, Ag (Cu, Au).
  4½ miles S. Steins, S. P. R. R.; 12 miles N. Antelope, E. P. & S. W. R. R.
  Granite, Paleozoic sediments cut by granite porphyry.
  Replacements, contact metamorphic.

20. **Granite Gap (San Simon)**—Continued.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51-53, 62, 63-64, 329-331, 340.
    Min. Res. 1905, p. 280.
    1906, p. 307.
    1909, pt. 1, p. 437.

21. **Hachita (Eureka, Sylvanite).** Pb, Ag, Cu, Au.
    12 miles SW. Hachita, E. P. & S. W. R. R., stage.
    Paleozoic sediments cut by quartz monzonite and kersantite.
    Veins, contact metamorphic.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 55, 56, 57-58, 59, 60, 335-343.
    Min. Res. 1905, p. 280.
    1906, p. 307.
    1907, pt. 1, pp. 407, 408.
    1908, pt. 1, p. 514.
    1909, pt. 1, p. 437.

22. **Kimball (Steins Pass).** Ag, Au, Cu.
    Steins station, S. P. R. R.
    Diorite porphyry and rhyolite.
    Veins.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 68, 69-70, 328-329.
    Min. Res. 1905, p. 280.
    1906, p. 307.
    1907, pt. 1, p. 408.
    1909, pt. 1, p. 438.

23. **Lone Mountain.** Ag.
    6 miles E. Silver City, A. T. & S. F. R. R.
    Paleozoic sediments cut by quartz monzonite and granite porphyry.
    Replacements.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 30, 38, 62, 63-64, 65, 320.

24. **Pinos Altos.** Cu, Au, Pb, Ag, Zn. (D, Pl.)
    8 miles NNE. Silver City, A. T. & S. F. R. R., stage.
    Paleozoic sediments cut by granodiorite and diorite.
    Veins, replacements.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 35, 38, 43, 57-58, 59, 61, 62, 64, 75, 297-301.
    Paige, S., The ore deposits near Pinos Altos, N. Mex.: Bull. 470, 1911, pp. 109-125.
    Min. Res. 1905, p. 280.
    1907, pt. 1, p. 408.
    1908, pt. 1, pp. 514-515.
    1909, pt. 1, p. 438.
    Top. sheet Silver City.

25. **Pyramid (Lordsburg).** Ag, Cu, Mo.
    8 miles S. Lordsburg, S. P. R. R.
    Diorite cut by andesite.
    Veins.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 39, 57-58, 60-61, 332-335.

GRANT COUNTY—Continued.

25. **Pyramid (Lordsburg)**—Continued.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1905, p. 280.
1906, p. 307.
1907, pt. 1, p. 408.
1908, pt. 1, p. 514.
1909, pt. 1, p. 437.

26. **Red Hill.** Pb, Ag, Au, Cu.
15 miles S. Playas, E. P. & S. W. R. R.
Min. Res. 1905, p. 280.
1906, p. 307.
1907, pt. 1, p. 408.
1908, pt. 1, p. 515.
1909, pt. 1, p. 438.

27. **Santa Rita (Hanover).** Cu, Fe.
Station A. T. & S. F. R. R.
Paleozoic and Cretaceous sediments cut by quartz monzonite porphyry and capped by rhyolite.
Veins, contact metamorphic.
Birkinbine, J., Iron ores of the United States: Eighteenth Ann. Rept., pt. 5, 1897, pp. 48–50.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 3, 5, 18, 38, 41–43, 51–53, 55, 57–58, 305, 317.
Paige, S., The Hanover iron-ore deposits, New Mexico: Bull. 380, 1909, pp. 199–214.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1882, pp. 147–148, 225–226.
1883–84, p. 285.
1887, p. 76.
1906, pp. 402–403.
1907, pt. 1, pp. 408, 613.
1908, pt. 1, pp. 214, 513–514.
1909, pt. 1, pp. 170, 437.
Top. sheets Silver City, Santa Rita special.

28. **Steeplerock.** Au, Ag.
16 miles NE. Duncan, Ariz., A. & N. M. R. R.
Diorite porphyry and rhyolite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 68, 69–71, 327–328.
Min. Res. 1907, pt. 1, p. 408.
1908, pt. 1, p. 515.

29. **Telegraph.** Ag.
25 miles NW. Silver City, A. T. & S. F. R. R.
Pre-Cambrian granite and gneiss and Paleozoic sediments.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 38, 57–58, 61, 325–326.

30. **Virginia (Lordsburg).** Ag, Cu (Au).
3 miles SSW. Lordsburg, S. P. R. R.
Diorite cut by andesite.

GRANT COUNTY—Continued.

30. **Virginia (Lordsburg)**—Continued.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 39, 57–58, 60–61, 332–335.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1905, p. 118.
Min. Res. 1906, p. 307.
1908, pt. 1, p. 514.
1909, pt. 1, pp. 437–438.

LINCOLN COUNTY.

31. **Cedar Creek (Alto).** Ag (Cu, Au).
10 miles W. Capitan, E. P. & S. W. R. R.
Min. Res. 1908, pt. 1, p. 515.
1909, pt. 1, p. 438.

31a. **Estey (Oscuro).** Cu.
15 miles WNW. Oscuro, E. P. & S. W. R. R.
"Red Beds."
Disseminated.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 77, 78, 201, 202.
Lee, W. T., and Girty, G. H., The Manzano group of the Rio Grande valley, New Mexico: Bull. 389, 1909.
Min. Res. 1907, pt. 1, p. 413.
1908, pt. 1, p. 519.

32. **Gallinas.** Au. (Pl.)
5 miles W. Corona, E. P. & S. W. R. R.
Wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 176.
Min. Res. 1909, pt. 1, p. 438.

33. **Jicarilla.** Au, Ag. (Pl, D.)
8 miles ESE. Ancho, E. P. & S. W. R. R.
Quartz monzonite cut by diorite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 39, 51–53, 57–58, 59, 60, 75, 176, 183–184.
Min. Res. 1907, pt. 1, p. 409.
1908, pt. 1, p. 515.
1909, pt. 1, p. 438.

34. **Nogal (Bonita, Parsons).** Au, Ag.
12–20 miles ESE. Carrizozo, E. P. & S. W. R. R., stage.
Monzonite porphyry and diorite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 39, 57–58, 75, 175–179.
Min. Res. 1905, pp. 280–281.
1906, p. 308.
1907, pt. 1, p. 409.
1908, pt. 1, p. 515.
1909, pt. 1, p. 438.

35. **Whiteoaks.** Au, Ag. (D, Pl.)
12 miles NE. Carrizozo, E. P. & S. W. R. R.
Cretaceous sediments cut by monzonite.

LINCOLN COUNTY—Continued.

35. **Whiteoaks**—Continued.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 19, 39, 57–58, 60, 66, 175–176, 179–182.
Min. Res. 1905, p. 280.
1906, p. 308.
1907, pt. 1, p. 409.
1908, pt. 1, pp. 515–516, 727.
1909, pt. 1, p. 439.

LUNA COUNTY.

36. **Cooks Peak.** Pb, Ag. Au, Zn.
17 miles W. Nutt, A. T. & S. F. R. R.
Paleozoic sediments cut by granodiorite porphyry.
Replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 37, 39, 62, 63–64, 287–289.
Min. Res. 1905, p. 281.
1906, p. 308.
1907, pt. 1, p. 409.
1908, pt. 1, p. 516.
1909, pt. 1, p. 439.
Top. sheet Deming.

37. **Florida Mountains.** Ag, Pb (Cu, Au).
12 miles SE. Deming, S. P. R. R., A. T. & S. F. R. R.
Granite porphyry, andesite, and limestone.
Replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 27, 28, 30, 62, 225, 287, 289–290.
Min. Res. 1905, p. 281.
1906, p. 308.
1907, pt. 1, p. 409.
1908, pt. 1, p. 516.
Top. sheet Deming.

38. **Fremont.** Pb, Ag.
15 miles SE. Hachita, E. P. & S. W. R. R.
Paleozoic sediments cut by granite porphyry and kersantite.
Veins and replacement.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 58, 60, 345–348.
Min. Res. 1909, pt. 1, p. 439.

39. **Tres Hermanas.** Zn, Pb, Au, Ag.
15 miles NE. Hermanas, E. P. & S. W. R. R.; 25 miles S. Deming, S. P. R. R.
Paleozoic sediments cut by quartz syenite porphyry.
Veins, contact metamorphic.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 38, 41, 51, 55, 57–58, 287, 292–295.
——— The Tres Hermanas mining district, New Mexico: Bull. 380, 1909, pp. 123–128.
Min. Res. 1905, p. 281.
1906, p. 308.
1908, pt. 1, p. 516.
1909, pt. 1, p. 439.

LUNA COUNTY—Continued.

40. **Victorio (Gage).** Pb, Ag, Au, W.
Station S. P. R. R.
Limestone capped by andesite.
Veins, replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 43, 62, 63, 64, 287, 290–292.
Min. Res. 1906, p. 308.
1907, pt. 1, p. 409.
1908, pt. 1, pp. 516, 726.
Top. sheet Deming.

OTERO COUNTY.

41. **Highrolls.** Cu, Ag.
2 miles N. Mountain Park, E. P. & S. W. R. R.
Min. Res. 1908, pt. 1, p. 516.
1909, pt. 1, p. 439.

42. **Jarilla (Orogrande, Silver Hill, Brice).** Au, Ag, Cu (Pb). (D, Pl.)
Brice station, E. P. & S. W. R. R.
Paleozoic sediments cut by monzonite porphyry.
Contact metamorphic and veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 19, 35, 56, 60, 75, 184–187.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1905, p. 281.
1906, p. 309.
1907, pt. 1, pp. 410, 614.
1908, pt. 1, pp. 516–517.
1909, pt. 1, p. 439.

43. **Tularosa.** Cu, Ag.
13 miles ENE. Monterey, E. P. & S. W. R. R.
Paleozoic and Mesozoic sediments, diorite.
Veins, disseminations.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 77, 78, 184, 187–190.
Min. Res. 1905, p. 281.
1906, p. 309.
1907, pt. 1, p. 410.
1908, pt. 1, p. 517.
1909, pt. 1, p. 439.

RIO ARRIBA COUNTY.

44. **Abiquiu.** Cu.
19 miles NW. Chamita, D. & R. G. R. R., stage.
"Red Beds."
Disseminations.
Emmons, S. F., The copper in the red beds of the Colorado Plateau region: Bull. 260, 1905, p. 225.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 75, 77, 124, 149.
Min. Res. 1905, p. 282.

45. **Bromide.** Cu, Au, Ag.
12 miles W. Tres Piedras, D. & R. G. R. R.
Pre-Cambrian schist.

RIO ARRIBA COUNTY—Continued.

45. **Bromide**—Continued.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 49, 50, 51, 124, 126, 130–133.
Min. Res. 1905, pp. 281–282.
1907, pt. 1, p. 410.
1908, pt. 1, p. 517.

46. **Gallina.** Cu, Pb, Ag.
65 miles WNW. Chamita, D. & R. G. R. R.
"Red Beds."
Disseminated.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 147–148.
Min. Res. 1908, pt. 1, p. 517.

47. **Hopewell (Headstone).** Au, Ag, Cu. (D, Pl.)
20 miles WNW. Tres Piedras, D. & R. G. R. R.
Pre-Cambrian schists.
Veins, wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 27, 28, 49, 50, 51, 75, 124–130.
Min. Res. 1905, p. 281.
1907, pt. 1, p. 410.
1908, pt. 1, p. 517.

SANDOVAL COUNTY.

48. **Cochiti (Bland).** Au, Ag.
27 miles WNW. Domingo, A. T. & S. F. R. R.
Monzonite and rhyolite porphyry.
Veins, replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 68, 69, 70, 71, 141, 150–158.
Min. Res. 1905, p. 282.
1907, pt. 1, p. 411.
Top. sheet Jemez.

49. **Cuba (Nacimiento Mountains).** Cu.
88 miles NNW. Alameda, A. T. & S. F. R. R., stage to Jemez Springs.
"Red Beds."
Disseminations.
Emmons, S. F., The copper in the red beds of the Colorado Plateau region: Bull. 260, 1905, p. 225.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 77, 78, 143–147.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1882, pp. 225–226.
1906, p. 309.
Top. sheet Jemez.

50. **Placitas.** Cu.
8 miles ESE. Bernalillo, A. T. & S. F. R. R.
Paleozoic sediments.
Replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 141.
Min. Res. 1907, pt. 1, p. 411.
Top. sheet San Pedro.

SAN MIGUEL COUNTY.

51. **Cooper (Pecos).** Cu, Au, Ag.
    21 miles NNE. Glorieta, A. T. & S. F. R. R.
    Pre-Cambrian schists.
    Disseminated.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 112–114.
    Min. Res. 1905, p. 282.
    1906, p. 309.
    1907, pt. 1, p. 411.
    Top. sheet Santa Fe.
52. Omitted.
53. **Mineral Hill.** Cu.
    20 miles WNW. Las Vegas, A. T. & S. F. R. R.
    Top. sheet Las Vegas.
54. **Rociada.** Au, Ag, Cu (Pb, Zn).
    29 miles NNW. Las Vegas, A. T. & S. F. R. R.
    Pre-Cambrian gneiss and schist and Paleozoic sediments.
    Veins.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 27, 49, 50, 51, 109, 114–116.
    Top. sheet Las Vegas.
55. **Tecolote (Salitre, San Pablo).** Cu.
    12 miles SE. Las Vegas, 10 miles N. Bernal, A. T. & S. F. R. R.
    Upper Carboniferous and Cretaceous sediments.
    Disseminated.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 77, 109, 116–123.
    Min. Res. 1905, p. 282.
    1906, p. 309.
    1907, pt. 1, p. 411.
    Top. sheets Las Vegas, Bernal.

SANTA FE COUNTY.

56. **Cerrillos.** Pb, Ag, Cu, Au.
    Station A. T. & S. F. R. R.
    Cretaceous sediments cut by monzonite porphyry.
    Veins.
    Clarke, F. W., and Diller, J. S., Turquoise from New Mexico: Bull. 42, 1887, p. 39.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 35, 36, 39, 57, 58, 60, 163–167.
    Min. Res. 1905, p. 282.
    1906, p. 309.
    1907, pt. 1, p. 411.
    1908, pt. 1, p. 517.
    1909, pt. 1, pp. 439–440.
    Top. sheet San Pedro.
57. **Glorieta.** Fe.
    2 miles S. Fox Siding, A. T. & S. F. R. R.
    Cretaceous sandstone.
    Beds.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 77, 107, 111–112.

SANTA FE COUNTY—Continued.

58. **New Placers.** Au. (Pl.)
20 miles S. Cerrillos, A. T. & S. F. R. R.
Wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 17, 75, 76, 163, 164, 170–175.
Min. Res. 1905, p. 282.
1906, p. 309.
1907, pt. 1, pp. 411, 618.
1908, pt. 1, p. 517.
Top. sheet San Pedro.

59. **Old Placers (Ortiz, Dolores).** Au. (D, Pl.)
15 miles S. Cerrillos, A. T. & S. F. R. R.
Monzonite porphyry and diorite.
Contact metamorphic, veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 17, 75, 76, 167–169.
Top. sheet San Pedro.

59a. **San Pedro.** Cu, Au, Ag, Pb.
20 miles S. Cerrillos, A. T. & S. F. R. R.
Paleozoic and Cretaceous sediments cut by porphyry.
Contact metamorphic, veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51–53, 55, 57–58, 60, 62, 64, 171–174.

SIERRA COUNTY.

60. **Caballos Mountains.** Cu, Ag, Pb (Au, V). (D, Pl.)
15 miles NW. Rincon, A. T. & S. F. R. R.
Carboniferous sediments.
Veins, disseminations.
Hess, F. L., Vanadium in the Sierra de los Caballos, New Mexico: Bull. 530, 1912.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 27, 28, 29, 30, 74, 218, 229, 238, 283–285.

61. **Chloride (Apache, Cuchillo Negro).** Ag, Cu, Au, Pb.
51 miles WNW. Engle, A. T. & S. F. R. R., stage.
Paleozoic sediments capped by andesite and rhyolite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 55, 68–71, 218, 260–266.
Min. Res. 1905, pp. 282–283.
1906, pp. 309–310.
1907, pt. 1, p. 412.

62. **Hermosa (Palomas).** Ag, Pb.
35 miles W. Engle, A. T. & S. F. R. R.
Paleozoic sediments capped by andesite and rhyolite.
Veins and replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 55, 62–67, 77, 218, 232, 233, 267–268.
Min. Res. 1905, p. 283.
1908, pt. 1, p. 518.
1909, pt. 1, p. 440.

SIERRA COUNTY—Continued.

63. **Hillsboro (Las Animas).** Au, Ag, Cu, V, Mg, Fe. (D, Pl.)
18 miles N. Lake Valley, A. T. & S. F. R. R.
Paleozoic sediments cut by monzonite porphyry and capped by andesite.
Veins and replacements.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 30, 31, 37, 39, 43, 62, 64, 65, 68, 69, 70, 75, 214, 218, 227–228, 238, 239, 272–276, 277.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1887, p. 76.
1905, p. 282.
1906, p. 310.
1907, pt. 1, p. 412.
1908, pt. 1, p. 518.
1909, pt. 1, p. 440.

64. **Kingston (Black Range).** Ag, Pb, Cu.
27 miles NNW. Lake Valley, A. T. & S. F. R. R.
Pre-Cambrian granite, gneiss, and schist, flanked by Paleozoic sediments and capped by andesite and rhyolite.
Replacements, veins.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 274.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 31, 34, 37, 62, 65, 218, 224, 225, 226, 228, 232, 245, 268–270.
Min. Res. 1905, p. 283.
1907, pt. 1, p. 412.
1908, pt. 1, p. 518.
1909, pt. 1, p. 440.

65. **Lake Valley.** Ag, Pb, Mn, Au, Cu.
Station A. T. & S. F. R. R.
Paleozoic sediments capped by andesite and rhyolite.
Replacement, veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 30, 31, 43, 62, 63, 64, 66, 218, 227, 228, 276–282.
Min. Res. 1905, p. 283.
1909, pt. 1, p. 440.

66. **Pittsburg (Shandon).** Au. (Pl.)
15 miles NW. Rincon, A. T. & S. F. R. R.
Wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 19, 218, 282–284.
Min. Res. 1905, p. 282.
1906, p. 310.
1909, pt. 1, p. 440.

67. **Tierra Blanca (Bromide No. 1).** Ag, Pb, Au.
15 miles NW. Lake Valley, A. T. & S. F. R. R.
Paleozoic sediments capped by andesite and rhyolite and cut by monzonite.
Replacement, veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 37, 64, 66, 218, 263–271.
Min. Res. 1905, p. 283.
1906, p. 310.

SOCORRO COUNTY.

68. **Canyoncito.** Pb, Cu.
    7 miles SE. La Joya, A. T. & S. F. R. R.
    Pre-Cambrian granite, gneiss, and schist, Paleozoic sediments cut by aplite.
    Veins.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 74, 218, 240-241.

69. **Cooney (Mogollon).** Au, Ag, Cu.
    85 miles NW. Silver City, A. T. & S. F. R. R.
    Tertiary volcanics.
    Veins.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 42, 43, 44, 47, 68, 69-71, 191-204.
    Weed, W. H., The copper mines in the United States in 1905: Bull. 285, 1906, p. 118.
    Min. Res. 1905, p. 284.
    1906, pp. 310-311.
    1907, pt. 1, pp. 412-413.
    1908, pt. 1, pp. 518-519.
    1909, pt. 1, p. 441.

70. Omitted.

71. **Jones Camp.** Fe.
    47 miles E. San Antonio, A. T. & S. F. R. R.
    Paleozoic limestone cut by monzonite.
    Contact metamorphic.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 51, 53, 203, 204.
    Min. Res. 1882, pp. 147-148.

72. **Hansonburg.** Cu.
    28 miles E. San Antonio, A. T. & S. F. R. R.
    Paleozoic sediments.
    Disseminated.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 77, 203.

73. **Magdalena (Kelly).** Zn, Pb, Au, Ag, Cu.
    Station A. T. & S. F. R. R.
    Schist overlain by crystalline limestone, shale, and quartzite; Paleozoic sediments cut by granite, monzonite, quartz monzonite porphyry, and diabase.
    Replacements.
    Dutton, C. E., Mount Taylor and the Zuñi Plateau: Sixth Ann. Rept., 1885, p. 194.
    Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 18, 19, 47, 51-53, 55, 214, 218, 220, 241-258.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906.
    Min. Res. 1883-84, p. 425.
    1885, p. 258.
    1886, p. 146.
    1887, p. 110.
    1888, p. 89.
    1904, p. 276.
    1905, p. 283.
    1906, pp. 311, 403, 476.
    1907, pt. 1, p. 413.
    1908, pt. 1, p. 519.
    1909, pt. 1, p. 441.

SOCORRO COUNTY—Continued.

74. **Mill Canyon (Hop Canyon).** Au, Ag, Cu.
 6 miles S. Magdalena, A. T. & S. F. R. R.
 Tertiary volcanics.
 Veins.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 258.

75. **Rosedale** Au, Ag.
 30 miles SW. Magdalena, A. T. & S. F. R. R.
 Tertiary volcanics.
 Veins.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 68, 70, 218, 259–260.
 Min. Res. 1905, p. 284.
 1907, pt. 1, p. 413.
 1908, pt. 1, p. 519.
 1909, pt. 1, p. 441.

76. **San Andreas.** Cu, Pb, Bi.
 20 miles E. Aleman, A. T. & S. F. R. R.
 Paleozoic sediments.
 Veins.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 35, 74, 205, 234.
 Min. Res. 1908, pt. 1, p. 713.

77. **San Lorenzo.** Cu.
 20 miles NW. Socorro, A. T. & S. F. R. R.
 Tertiary volcanics (?).
 Veins (?).
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, p. 241.

78. **Silver Mountain (Water Canyon).** Au, Ag, Cu, Pb.
 15 miles SE. Magdalena, A. T. & S. F. R. R.
 Paleozoic sediments cut by porphyry.
 Contact metamorphic.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 36, 37, 242, 245, 246, 247, 258.

79. **Socorro.** Ag, Au.
 2 miles NW. Socorro, A. T. & S. F. R. R.
 Andesite tuff.
 Veins.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 69–71, 218, 239–240.
 Top. sheet Socorro.

TAOS COUNTY.

80. **Anchor (La Belle).** Au, Ag.
 30 miles NNW. Ute Park, St. L. R. M. & P. R. R.
 Quartz monzonite and diorite porphyry.
 Veins.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 60, 82, 88, 89.

81. Omitted.

82. **Picuris (Copper Hill).** Cu, Ag, Au. (D, Pl.)
 12 miles ENE. Embudo, D. & R. G. R. R.
 Pre-Cambrian granite and schists.
 Veins.
 Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 27, 28, 49–51, 82, 89–91.

TAOS COUNTY—Continued.

83. **Red River.** Au, Ag.
29 miles NW. Ute Park, St. L. R. M. & P. R. R.
Pre-Cambrian granite and schist cut by monzonite porphyry, rhyolite, and andesite.
Veins.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 35, 36, 42, 43, 68, 69, 70, 71, 82, 84–88.
Min. Res. 1906, p. 312.
1907, pt. 1, p. 413.

84. **Twining (Rio Hondo).** Cu, Au, Pb, Ag, Sb. (D, Pl.)
34 miles NE. Barranca, D. & R. G. R. R.
Pre-Cambrian granite and schist cut by monzonite.
Veins, wash gravels.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 75, 83, 84.
Min. Res. 1906, p. 312.
1907, pt. 1, p. 413.

VALENCIA COUNTY.

85. **Copperton (Zuni Mountains).** Cu.
23 miles W. Grant, A. T. & S. F. R. R.
Pre-Cambrian granite and granite porphyry overlain by Paleozoic and Mesozoic sediments.
Veins, disseminated.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 28, 77, 134, 135, 137–140.
Dutton, C. E., Mount Taylor and the Zuñi Plateau: Sixth Ann. Rept., 1885, pp. 105–198.
Top. sheet Wingate.

86. **Manzano.** Cu.
Mountain station, A. T. & S. F. R. R.
Paleozoic and Mesozoic sediments.
Disseminated.
Lindgren, W., The ore deposits of New Mexico: P. P. 68, 1910, pp. 134, 163.

OREGON.

In the State of Oregon there are 73 mining districts in 16 counties. Gold is the predominant mineral in 63 of these districts, and almost all of these contain some placer deposits. In 7 districts copper predominates, in 1 silver, and in 2 quicksilver.

Distribution of the predominant metals produced in the mining districts of Oregon.

County.	Gold.	Silver.	Copper.	Quicksilver.	Total.
Baker	15	1	1		17
Clackamas			1		1
Coos	3				3
Crook	1		1		2
Curry	5				5
Douglas	7			1	8
Grant	6				6
Harney	1		1		2
Jackson	6		1		7
Josephine	10		1		11
Lake	1				1
Lane	3			1	4
Malheur	2				2
Marion	1				1
Union	1		1		2
Wheeler	1				1
	63	1	7	2	73

MINING DISTRICTS IN OREGON.

[See Pl. XI. Additional references will be found in Mineral Resources for 1910 and 1911.]

BAKER COUNTY.

1. **Bonanza (Geiser).** Au, Ag. (D, Pl.)
   8 miles NW. Whitney, S. V. R. R.
   Argillites cut by granodiorite and capped by Tertiary volcanics.
   Veins.
   Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 697–704.
   Min. Res. 1906, p. 316.
   1907, pt. 1, p. 423.
   1908, pt. 1, p. 528.
   Top. sheet Sumpter.
2. **Buck Gulch.** Au. (Pl.)
   7 miles W. Sumpter, S. V. R. R.
   Stream gravels.
   Pardee, J. T., Placer gravels of the Sumpter and Granite districts, eastern Oregon: Bull. 430, 1910, pp. 59–65.
   Top. sheet Sumpter.
3. **Burkemont.** Cu.
   20 miles N. Baker City, O. W. R. R. & N. Co.
   Amygdaloidal basalt.
   Disseminations.
   Top. sheet Baker City.

BAKER COUNTY—Continued.

4. **Cable Cove.** Au, Ag, Cu.
14 miles N. Sumpter, S. V. R. R.
Granite.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 671–676.
Pardee, J. T., Placer gravels of the Sumpter and Granite districts, easter Oregon: Bull. 430, 1910, pp. 59–65.
Min. Res. 1906, p. 316.
1907, pt. 1, p. 423.
1908, pt. 1, p. 528.
Top. sheet Burkemont.

5. **Conner Creek.** Au, Ag. (D, Pl.)
19 miles N. Huntington, O. W. R. R. & N. Co.
Argillites.
Veins and stream gravels.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 756–759.
Min. Res. 1906, p. 316.
1907, pt. 1, p. 423.
1908, pt. 1, p. 528.

6. **Cornucopia.** Au, Ag.
62 miles NE. Baker City, O. W. R. R. & N. Co.
Triassic (?) sediments cut by granite.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 740–745.
Min. Res. 1906, p. 316.
1907, pt. 1, pp. 422–423.
1908, pt. 1, pp. 527–528.
1909, pt. 1, p. 447.

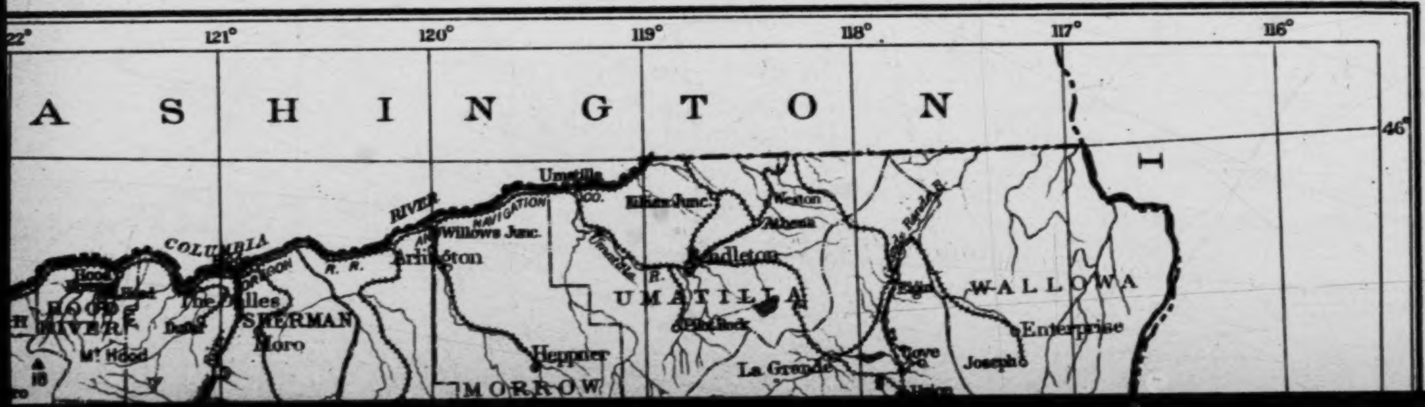
7. **Cracker Creek (Sumpter).** Au, Ag. (D, Pl.)
Sumpter station, S. V. R. R.
Paleozoic sediments and greenstones cut by granite.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 645–671.
Pardee, J. T., Faulting and vein structure in the Cracker Creek gold district, Baker County, Oreg.: Bull. 380, 1909, pp. 85–93.
Min. Res. 1905, p. 290.
1906, p. 316.
1907, pt. 1, pp. 422, 423.
1908, pt. 1, p. 527.
1909, pt. 1, p. 447.
Top. sheet Sumpter.

8. **Elkhorn.** Au, Ag.
14 miles NW. Baker City, O. W. R. R. & N. Co.
Argillites cut by granodiorite and diorite.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 645–649.
Min. Res. 1905, p. 291.
1907, pt. 1, p. 422.
Top. sheet Sumpter.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

125°
124°
123°
122°
46°
W
A
Astoria
CLATSOP
Seaside
Mist
Globe
COLUMBIA
St Helens
Pittsburg
WASHINGTON
Hillsboro
Tillamook
MULTNOMAH
HOOD
RIVER
Oregon Cy.
18
McMinnville
Clackamas

BULLETIN 507 PLATE XI


121°
120°
119°
118°
117°
116°
46°
ASHINGTON
I
Umatilla
COLUMBIA
RIVER
OREGON R. R.
NAVIGATION CO.
Willows Junc.
Arlington
Echo Junc.
Weston
Athena
Pendleton
Umatilla R.
UMATILLA
Pilot Rock
Heppner
MORROW
La Grande
Elgin
Cove
WALLOWA
Enterprise
Joseph
Hood
The Dalles
SHERMAN
Moro
HOOD RIVER
Mt Hood
18

LIST OF MINING DISTRICTS

BAKER COUNTY

1. Bonanza (Geiser)
2. Buck Gulch
3. Burkemont
4. Cable Cove
5. Connor Creek
6. Cornucopia
7. Cracker Creek (Sumpter)
8. Elkhorn
9. Greenhorn
10. Iron Dyke (Homestead)
11. Pocahontas (Auburn, Minersville)
12. Rye Valley (Mormon Basin)
13. Sanger
14. Sparta
15. Stice
16. Virtue
17. Weatherby

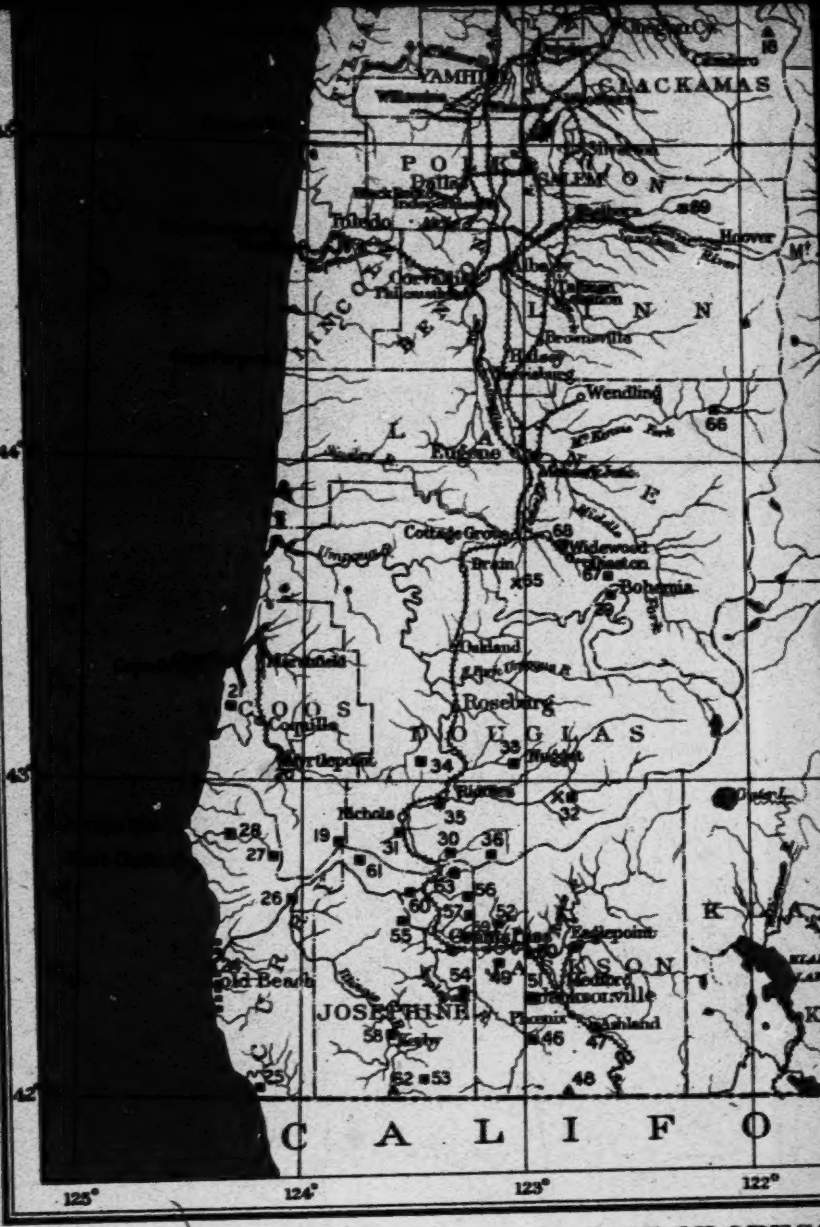
CLACKAMAS COUNTY

18. Chena Creek

COOS COUNTY

19. Eden
20. Myrtle Point (Johnson)
21. Randolph

CROOK COUNTY



45°
44°
43°
42°
125°
124°
123°
122°
YAMHILL
Willamina
CLACKAMAS
Oregon City
Canby
18
POLK
Dallas
Independence
MARION
SALEM
Silverton
Toledo
Corvallis
Philomath
LINCOLN
BENTON
Albany
Lebanon
LINN
Hoover
Brownsville
Halsey
Harrisburg
Wendling
Eugene
LANE
66
McKenzie Fork
Cottage Grove
68
Wildwood
Disston
67
Bohemia
Brain
65
29
Umpqua R.
Oakland
Roseburg
Marshfield
COOS
Coquille
Myrtlepoint
DOUGLAS
34
33
Nugget
Riddles
Nichols
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Grants Pass
Eaglepoint
Gold Beach
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49
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JACKSON
Medford
Jacksonville
JOSEPHINE
Phoenix
Ashland
58
Kerby
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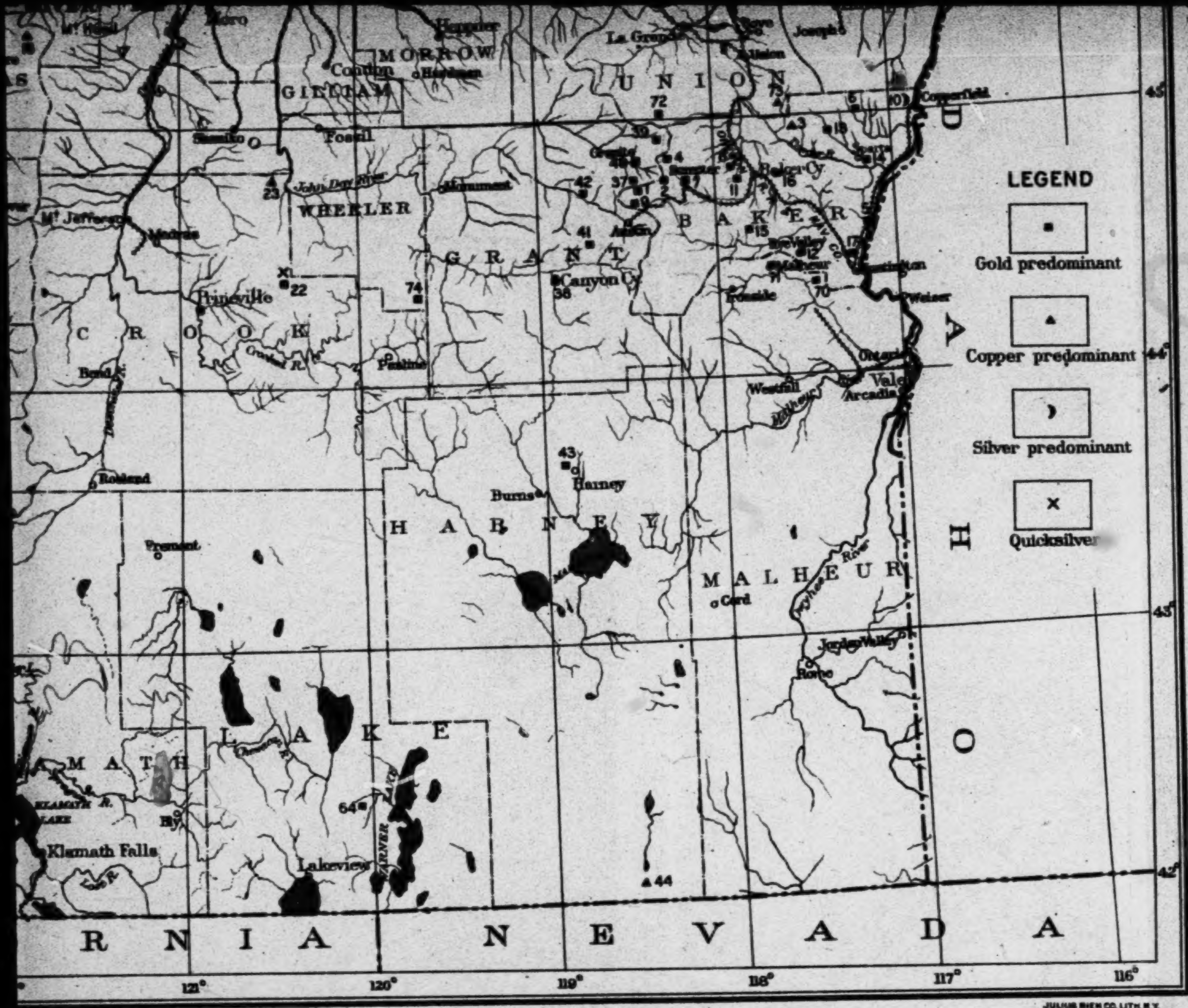
48
25
21
CURRY
K
CALIFO
89

MAP OF OREG

25


LEGEND
Gold predominant
Copper predominant
Silver predominant
Quicksilver
MORROW
GILLIAM
UNION
WHEELER
GRANT
BAKER
CROOK
HARNEY
MALHEUR
LAKE
KLAMATH
IDAHO
NEVADA
Heppner
La Grande
Joseph
Union
Condon
Hardman
Shaniko
Fossil
John Day River
Monument
Mt. Jefferson
Madras
Prineville
Crooked R.
Paulina
Bend
Sumpter
Baker City
Austin
Canyon City
Huntington
Weiser
Ontario
Vale
Westfall
Arcadia
Malheur
Burns
Harney
Rosland
Fremont
Cord
Jordan Valley
Rome
Owyhee River
Klamath Falls
Klamath Lake
Lakeview
Warner Lake
Bly
Copperfield
72
73
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45°
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43°
42°
121°
120°
119°
118°
117°
116°
JULIUS BIEN CO. LITH. N.Y.

EGON, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

21. Randolph

CROOK COUNTY

22. Howard (Ochoco, Bolivar)
23. Trout Creek (Ashwood)

CURRY COUNTY

24. Beach placers (Denmark, Harbor, Gold Creek, etc.)
25. Chetco
26. Lower Rogue (Mile Creek)
27. Rusty Butte
28. Sixes River

DOUGLAS COUNTY

29. Bohemia
30. Crackerjack (Cow Creek)
31. Dothan
32. Drew
33. Nugget (Myrtle Creek)
34. Olalla
35. Riddles
36. Starvout (Green Mountain)

GRANT COUNTY

37. Alamo
38. Canyon
39. Crane Creek
40. Granite
41. Quartzburg (Comer)
42. Susanville (Galena)

HARNEY COUNTY

43. Harney
44. Pueblo (Denio)
45. Omitted

JACKSON COUNTY

46. Applegate
47. Ashland
48. Blue Ledge
49. Draper
50. Gold Hill (Foots Creek, Galls Creek, Sardine Creek)
51. Jacksonville
52. Pleasant Valley (Evans Creek)

JOSEPHINE COUNTY

53. Althouse
54. Applegate
55. Galice
56. Greenback (Upper Grave Creek)
57. Jumpoff Joe
58. Kerby
59. Louse Creek (Granite Hill)
60. Lower Grave Creek
61. Mt. Reuben
62. Waldo
63. Wolf Creek (Golden)

LAKE COUNTY

64. Coyote Hills

LANE COUNTY

65. Black Butte
66. Blue River
67. Bohemia (Champion)
68. Fall Creek

MARION COUNTY

69. Santiam (Elkhorn)

MALHEUR COUNTY

70. Humboldt
71. Malheur (Mormon Basin)

UNION COUNTY

72. Camp Carson
73. Medical Springs

WHEELER COUNTY

74. Spanish Gulch

9. **Greenhorn.** Au, Ag.
14 miles WNW. Whitney, S. V. R. R.
Paleozoic sediments cut by granodiorite and diorite.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 692–697.
Min. Res. 1906, p. 317.
Top. sheet Sumpter.

10. **Iron Dyke (Homestead).** Ag, Cu, Pb, Au.
72 miles NE. Baker City, O. W. R. R. & N. Co.
Triassic greenstones.
Disseminations.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 748–750.
Min. Res. 1907, pt. 1, p. 423.
1908, pt. 1, p. 528.

11. **Pocahontas (Auburn, Minersville).** Au. (D, Pl.)
6 miles NW. Baker City, O. W. R. R. & N. Co.
Paleozoic argillites cut by diorite.
Veins, stream gravels.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 649–654.
Min. Res. 1909, pt. 1, p. 447.

12. **Rye Valley (Mormon Basin).** Au, Ag. (D, Pl.)
12 miles S. Durkee, O. W. R. R. & N. Co.
Paleozoic argillites, granite and granodiorite.
Veins, stream gravels.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, p. 767.
Min. Res. 1906, p. 316.
1907, pt. 1, p. 423.
1908, pt. 1, p. 528.
1909, pt. 1, p. 447.

13. **Sanger.** Au, Ag. (Pl, D.)
18 miles NE. Baker City, O. W. R. R. & N. Co.
Triassic sediments.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, p. 738.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 119.
Min. Res. 1907, pt. 1, p. 423.
1908, pt. 1, p. 528.

14. **Sparta.** Au, Ag. (D, Pl.)
27 miles ENE. Baker City, O. W. R. R. & N. Co.
Granite.
Veins.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 733–739.
Min. Res. 1907, pt. 1, p. 423.

15. **Stice.** Au, Ag. (Pl, D.)
18 miles S. Salisbury, S. V. R. R.
Paleozoic argillites cut and capped by Tertiary volcanics.
Veins.

BAKER COUNTY—Continued.

15. **Stice**—Continued.
  Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 773–776.
  Min. Res. 1907, pt. 1, p. 423.
  Top. sheet Baker City.

16. **Virtue.** Au, Ag.
  10 miles ESE. Baker City, O. W. R. R. & N. Co.
  Paleozoic argillites cut by diorite.
  Veins.
  Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 721–726.
  Min. Res. 1899 (Twenty-first Ann. Rept., pt. 6), p. 301.
    1906, p. 316.
    1907, pt. 1, p. 422.
    1908, pt. 1, p. 528.
    1909, pt. 1, p. 447.
  Top. sheet Baker City.

17. **Weatherby.** Au, Ag. (D, Pl.)
  Station O. W. R. R. & N. Co.
  Paleozoic sediments cut by granite and diorite.
  Veins.
  Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, p. 762.
  Min. Res. 1907, pt. 1, pp. 423–424.
    1908, pt. 1, p. 528.

CLACKAMAS COUNTY.

18. **Chena Creek.** Cu, Au.
  31 miles W. Boring, P. R. R. L. & P. Co.

COOS COUNTY.

19. **Eden.** Au. (Pl.)
  24 miles W. Dothan, S. P. R. R.
  Stream gravels.

20. **Myrtle Point (Johnson).** Au, Ag. (D, Pl.)
  59 miles WSW. Roseburg, S. P. R. R.
  Stream gravels.
  Diller, J. S., A geological reconnaissance in northwestern Oregon: Seventeenth Ann. Rept., pt. 1, 1896, pp. 519–520.
  Min. Res. 1907, pt. 1, p. 424.
    1909, pt. 1, p. 447.
  Top. sheet Coos Bay.
  Folio 73, 1901.

21. **Randolph.** Au, Pt. (Pl.)
  83 miles W. Roseburg, S. P. R. R.
  Beach placers.
  Min. Res. 1887, p. 142.
  Top. sheet Coos Bay.
  Folio 73, 1901.

CROOK COUNTY.

22. **Howard (Ochoco, Bolivar).** Au, Ag, Hg. (D, Pl.)
  80 miles S. Shaniko, O. W. R. R. & N. Co.
  Min. Res. 1906, pp. 494–495.
    1908, pt. 1, pp. 691–692.

23. **Trout Creek (Ashwood).** Cu, Zn, Au, Ag.
  26 miles S. Shaniko, O. W. R. R. & N. Co.

CURRY COUNTY.

24. **Beach placers (Denmark, Harbor, Gold Creek, etc.).** Au, Pt. (Pl.)
100–150 miles SW. Roseburg, S. P. R. R.
Beach gravels.
Day, D. T., and Richards, R. H., Black sands from placer mines: Bull. 285, 1906, pp. 150–164.
Kemp, J. F., The geological relations and distribution of platinum and associated metals: Bull. 193, 1902, pp. 51–53.
Min. Res. 1887, p. 142.
1905, pp. 1175–1258.
1909, pt. 1, p. 448.

25. **Chetco.** Au, Pt. (Pl.)
124 miles SW. Grants Pass, S. P. R. R.
Beach gravels.
Day, D. T., and Richards, R. H., Black sands from placer mines: Bull. 285, 1906, pp. 150–164.
Min. Res. 1905, pp. 291, 1175–1258.
1906, p. 316.
1907, pt. 1, p. 424.

26. **Lower Rogue (Mile Creek).** Au. (Pl.)
52 miles SW. Dothan, S. P. R. R.
Stream gravels.
Top. sheet Port Orford.
Folio 89, 1903.

27. **Rusty Butte.** Au. (Pl.)
84 miles SW. Dillard, S. P. R. R.
Stream gravels.
Top. sheet Port Orford.
Folio 89, 1903.

28. **Sixes River.** Au. (Pl.)
78 miles SW. Dillard, S. P. R. R.
Stream gravels.
Top. sheet Port Orford.
Folio 89, 1903.

DOUGLAS COUNTY.

29. **Bohemia.** Au, Ag (Zn, Pb, Cu).
20 miles ESE. Wildwood, 12 miles SE. Disston, O. & S. E. R. R.
Tertiary volcanics.
Veins.
Diller, J. S., The Bohemia mining region of western Oregon: Twentieth Ann. Rept., pt. 3, 1900, pp. 7–64.
MacDonald, D. F., Notes on the Bohemia mining district, Oregon: Bull. 380, 1909, pp. 80–84.
Min. Res. 1907, pt. 1, p. 708.
1908, pt. 1, p. 533.

30. **Crackerjack (Cow Creek).** Au. (Pl.)
8 miles E. Glendale, S. P. R. R.
Stream gravels.
Diller, J. S., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, p. 148.
Min. Res. 1907, pt. 1, p. 424.

31. **Dothan.** Au. (Pl.)
Station S. P. R. R.
Stream gravels.
Min. Res. 1905, p. 291.
1906, p. 316.

DOUGLAS COUNTY—Continued.

32. **Drew.** Hg, Au. (D, Pl.)
33 miles E. Riddles, S. P. R. R.
Min. Res. 1908, pt. 1, p. 692.

33. **Nugget (Myrtle Creek).** Au, Ag, Cu. (D, Pl.)
12½ miles E. Myrtle Creek, S. P. R. R.
Cretaceous sediments, metagabbro, and serpentine.
Veins, disseminations, stream gravels.
Min. Res. 1905, p. 291.
1907, pt. 1, p. 424.
1908, pt. 1, p. 529.
1909, pt. 1, p. 448.
Top. sheet Roseburg.
Folio 49, 1898.

34. **Olalla.** Au. (Pl.)
9 miles WSW. Dillard, S. P. R. R.
Stream gravels.
Min. Res. 1909, pt. 1, p. 448.

35. **Riddles.** Au, Cu, Ni. (D, Pl.)
Station S. P. R. R.
Mesozoic sediments cut by basic dikes.
Disseminated.
Clarke, F. W., Some nickel ores from Oregon: Bull. 60, 1890, pp. 21–26.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1909, p. 148.
Kay, G. F., Nickel deposits of Nickel Mountain, Oregon: Bull. 315, 1907, pp. 120–127.
Min. Res. 1882, pp. 403–404.
1886, p. 171.
1887, pp. 127–128.
1888, p. 109.
1892, pp. 170–177.
1905, p. 408.
Top. sheet Riddles.

36. **Starvout (Green Mountain).** Au. (Pl.)
25 miles E. Glendale, S. P. R. R.
Stream gravels.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, pp. 148, 152.
Min. Res. 1908, pt. 1, p. 529.
Top. sheet Riddles.

GRANT COUNTY.

37. **Alamo.** Au, Ag. (D, Pl.)
20 miles WNW. Whitney, S. V. R. R.
Paleozoic argillites cut by diorite.
Veins, stream gravels.
Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 688–692.
Top. sheet Sumpter.

38. **Canyon.** Au. (D, Pl.)
30 miles SW. Austin, S. V. R. R.
Paleozoic argillites, serpentine, and diabase.
Veins, stream gravels.
Lindgren, W., The gold belt of the Blue Mountains ot Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 712–720.

GRANT COUNTY—Continued.

38. **Canyon**—Continued.
  Min. Res. 1905, p. 291.
    1907, pt. 1, p. 424.

39. **Crane Creek.** Au. (Pl.)
  20 miles NW. Sumpter, S. V. R. R.
  Stream gravels.
  Pardee, J. T., Placer gravels of the Sumpter and Granite districts, eastern Oregon: Bull. 430, 1910, pp. 59-65.
  Top. sheet Sumpter.

40. **Granite.** Au, Ag. (D, Pl.)
  14 miles WNW. Sumpter, S. V. R. R.
  Paleozoic argillites cut by diorite and granodiorite and capped by Tertiary volcanics.
  Veins.
  Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 677-688.
  Pardee, J. T., Placer gravels of the Sumpter and Granite districts, eastern Oregon: Bull. 430, 1910, pp. 59-65.
  Min. Res. 1905, p. 291.
    1906, p. 317.
    1907, pt. 1, pp. 424-425.
    1908, pt. 1, pp. 529-530.
    1909, pt. 1, p. 448.
  Top. sheet Sumpter.

41. **Quartzburg (Comer).** Au, Ag, Cu, Pb (Co).
  18 miles SW. Austin, S. V. R. R.
  Paleozoic argillites and greenstones cut by diorite and diabase.
  Veins.
  Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 708-712.
  Weed, W. H., The copper mines of the United States in 1905: Bull. 285 1906, p. 119.
  Min. Res. 1904, p. 314.
    1905, pp. 291, 409.
    1906, p. 317.
    1907, pt. 1, p. 425.
    1908, pt. 1, pp. 529-530.
  Top. sheet Sumpter.

42. **Susanville (Galena).** Au, Ag, Pb. (D, Pl.)
  27 miles NW. Austin, S. V. R. R.
  Paleozoic argillites and greenstones cut by granite and capped by basalt.
  Veins.
  Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 705-708.
  Min. Res. 1906, p. 317.
    1908, pt. 1, pp. 529-530.
    1909, pt. 1, p. 448.

HARNEY COUNTY.

43. **Harney.** Au. (Pl.)
  117 miles WSW. Vale, O. S. L. R. R.
  Min. Res. 1908, pt. 1, p. 530.
    1909, pt. 1, p. 448.

44. **Pueblo (Denio).** Cu.
  111 miles NW. Winnemucca, Nev., S. P. R. R., W. P. R. R.
  Granite (?).

HARNEY COUNTY—Continued.

44. **Pueblo (Denio)**—Continued.
  Waring, G. A., Geology and water resources of the Harney Basin region, Oregon: W. S. P. 231, 1909.

45. Omitted.

JACKSON COUNTY.

46. **Applegate.** Au. (D, Pl.)
  14 miles SW. Jacksonville, R. R. V. R. R.
  Paleozoic sediments and greenstones.
  Stream gravels, veins.
  Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48-79.
  Min. Res. 1907, pt. 1, p. 425.
  1908, pt. 1, pp. 520-531.
  1909, pt. 1, p. 448.
  Top. sheets Grants Pass, Ashland.

47. **Ashland.** Au. (Pl, D.)
  Station S. P. R. R.
  Paleozoic sediments, granodiorite, and greenstones.
  Stream gravels and veins.
  Min. Res. 1907, pt. 1, p. 425.
  1908, pt. 1, p. 531.
  Top. sheet Ashland.

48. **Blue Ledge.** Cu, Au.
  33 miles SSW. Jacksonville, R. R. V. R. R.
  Granodiorite (?).
  Veins (?).
  Top. sheet Ashland.

49. **Draper.** Au, Ag.
  10 miles S. Gold Hill, S. P. R. R.
  Greenstones and slates.
  Veins.
  Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48-79.
  Min. Res. 1908, pt. 1, p. 531.
  Top. sheet Grants Pass.

50. **Gold Hill (Foots Creek, Galls Creek, Sardine Creek).** Au. (D, Pl.)
  Station S. P. R. R.
  Greenstones and slates.
  Veins, stream gravels.
  Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48-79.
  Min. Res. 1905, p. 291.
  1906, p. 317.
  1907, pt. 1, pp. 425-426.
  1908, pt. 1, pp. 530-531.
  1909, pt. 1, p. 448.
  Top. sheets Grants Pass, Ashland.

51. **Jacksonville.** Au, Ag. (D, Pl.)
  Station R. R. V. R. R.
  Greenstones and slates.
  Veins, stream gravels.
  Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48-79.

JACKSON COUNTY—Continued.

51. **Jacksonville**—Continued.
Min. Res. 1905, p. 291.
1906, p. 317.
1907, pt. 1, p. 426.
1908, pt. 1, p. 531.
Top. sheets Ashland, Grants Pass.

52. **Pleasant Valley (Evans Creek).** Au. (Pl.)
20 miles N. Gold Hill, S. P. R. R
Stream gravels.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, pp. 150–151.
Min. Res. 1906, p. 531.
Top. sheet Riddles.

JOSEPHINE COUNTY.

53. **Althouse.** Au. (D, Pl.)
35 miles SSW. Grants Pass, S. P. R. R.
Greenstones.
Stream gravels, veins.
Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48–79.
Min. Res. 1907, pt. 1, p. 426.
1908, pt. 1, p. 532.
Top. sheet Grants Pass.

54. **Applegate.** Au. (Pl.)
14 miles SSE. Grants Pass, S. P. R. R.
Stream gravels.
Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48–79.
Min. Res. 1907, pt. 1, p. 426.
1908, pt. 1, pp. 532–533.
Top. sheet Grants Pass.

55. **Galice.** Au, Ag, Cu. (D, Pl.)
16 miles NW. Merlin, S. P. R. R.
Argillites cut by diorite.
Veins.
Min. Res. 1906, p. 318.
1907, pt. 1, p. 426.
1908, pt. 1, pp. 532–533.
1909, pt. 1, p. 449.

56. **Greenback (Upper Grave Creek).** Au, Ag, Cu. (Pl, D.)
9 miles E. Leland, S. P. R. R.
Serpentine, greenstone, Paleozoic sediments.
Stream gravels, veins.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, pp. 140–142, 149–150.
Min. Res. 1905, p. 292.
1906, p. 318.
1907, pt. 1, p. 426.
1908, pt. 1, pp. 532–533.
1909, pt. 1, p. 449.
Top. sheet Riddles.

57. **Jumpoff Joe.** Au, Ag. (D, Pl.)
8 miles N. Grants Pass, S. P. R. R.
Greenstone and serpentine.

JOSEPHINE COUNTY—Continued.

57. **Jumpoff Joe**—Continued.
Stream gravels, veins.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, pp. 143–145, 150.
Min. Res. 1905, p. 292.
1906, p. 318.
1907, pt. 1, p. 426.
1908, pt. 1, pp. 532–533.
Top. sheet Riddles.

58. **Kerby.** Au. (Pl.)
30 miles SSW. Grants Pass, S. P. R. R.
Stream gravels.
Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48–79.
Min. Res. 1907, pt. 1, p. 426.
1908, pt. 1, pp. 532–533.

59. **Louse Creek (Granite Hill).** Au. (D, Pl.)
5 miles N. Grants Pass, S. P. R. R.
Greenstone, serpentine, granodiorite.
Veins and stream gravels.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, p. 142.
——— Mineral resources of Grants Pass quadrangle and bordering districts Oregon: Bull. 380, 1909, pp. 48–79.
Min. Res. 1905, p. 292.
1906, p. 318.
1908, pt. 1, pp. 532–533.
Top. sheets Grant Pass, Riddles.

60. **Lower Grave Creek.** Au. (D, Pl.)
10 miles W. Leland, S. P. R. R.
Mesozoic slates and greenstones.
Veins, terrace and stream gravels.
Min. Res. 1906, p. 318.
1907, pt. 1, p. 427.
1908, pt. 1, pp. 532–533.

61. **Mount Reuben.** Au, Cu. (Pl, D.)
24 miles SSW. Dothan, S. P. R. R.
Veins.

62. **Waldo.** Cu, Au, Ag. (Pl, D.)
38 miles SSW. Grants Pass, S. P. R. R.
Gabbro and serpentine.
Terrace and stream gravels, stockworks.
Diller, J. S., and Kay, G. F., Mineral resources of the Grants Pass quadrangle and bordering districts, Oregon: Bull. 380, 1909, pp. 48–79.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 118.
Min. Res. 1887, p. 142.
1905, p. 292.
1906, pp. 318, 409.
1907, pt. 1, p. 427.
1908, pt. 1, pp. 532–533.
1909, pt. 1, p. 449.

JOSEPHINE COUNTY—Continued.

63. **Wolf Creek (Golden).** Au, Cu. (D, Pl.)
Station S. P. R. R.
Greenstone.
Stockworks, veins, terrace and stream gravels.
Diller, J. S., and Kay, G. F., The mines of the Riddles quadrangle, Oregon: Bull. 340, 1908, pp. 143, 149.
Min. Res. 1907, pt. 1, p. 427.
1908, pt. 1, pp. 532-533.
1909, pt. 1, p. 449.
Top. sheet Riddles.

LAKE COUNTY.

64. **Coyote Hills.** Au.
61 miles N. Alturas, Cal., N. C. & O. R. R.
Tertiary volcanics.
Veins.

LANE COUNTY.

65. **Black Butte.** Hg.
17 miles S. Cottage Grove, S. P. R. R.
Tertiary volcanics.
Veins, stockworks.
Min. Res. 1908, pt. 1, p. 691.
1909, pt. 1, p. 555.

66. **Blue River.** Au, Ag (Pb, Cu).
45 miles E. Springfield, S. P. R. R.
Tertiary volcanics, chiefly rhyolite.
Veins.
Diller, J. S., The Bohemia mining region of western Oregon: Twentieth Ann. Rept., pt. 3, 1900, pp. 7-64.
Min. Res. 1905, p. 292.
1906, p. 318.

67. **Bohemia (Champion).** Au, Ag, Zn, Pb, Cu (Hg).
14 miles S. Disston, O. & S. E. R. R.
Tertiary volcanics.
Veins and disseminations.
Diller, J. S., The Bohemia mining region of western Oregon: Twentieth Ann. Rept., pt. 3, 1900, pp. 7-64.
MacDonald, D. F., Notes on the Bohemia mining district, Oregon: Bull. 380, 1909, pp. 80-84.
Min. Res. 1905, pp. 292, 398.
1906, p. 319.
1908, pt. 1, p. 533.
1909, pt. 1, p. 450.

68. **Fall Creek.** Au, Ag.
15 miles ESE. Springfield, S. P. R. R.

MARION COUNTY.

69. **Santiam (Elkhorn).** Au, Ag, Pb, Cu.
14 miles NE. Gates, S. P. R. R.

MALHEUR COUNTY.

70. **Humboldt.** Au. (D, Pl.)
20 miles W. Huntington, O. W. R. R. & N. Co.
Argillites cut by granodiorite.
Veins, stream gravels.

MALHEUR COUNTY—Continued.

70. **Humboldt**—Continued.
    Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 770–773.
    Min. Res. 1909, pt. 1, p. 450.

71. **Malheur (Mormon Basin).** Au, Ag. (D, Pl.)
    22 miles SW. Durkee, O. W. R. R. & N. Co.
    Paleozoic argillites cut by diorite.
    Veins.
    Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 770–773.
    Min. Res. 1905, p. 292.
    1907, pt. 1, pp. 423, 427.
    1908, pt. 1, p. 533.
    1909, pt. 1, p. 450.

UNION COUNTY.

72. **Camp Carson.** Au, Ag, Pb, Cu. (Pl, D.)
    20 miles W. North Powder, O. W. R. R. & N. Co.
    Granite.
    Veins, stream gravels.
    Lindgren, W., The gold belt of the Blue Mountains of Oregon: Twenty-second Ann. Rept., pt. 2, 1901, pp. 676–677.

73. **Medical Springs.** Cu (Au, Ag).
    22 miles SSE. Union, C. R. R. of O.
    Paleozoic sediments cut by diorite.
    Contact metamorphic.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 119.

WHEELER COUNTY.

74. **Spanish Gulch.** Au. (Pl, D.)
    110 miles SE. Shaniko, O. W. R. R. & N. Co.
    Min. Res. 1905, p. 293.

SOUTH DAKOTA.

The Black Hills cover parts of three counties in western South Dakota. In this region there are 26 mining districts. In 14 districts the principal values are in gold, in 3 lead predominates, in 2 copper, in 1 silver, in 4 rare metals, and in 2 iron.

Distribution of the predominant metals produced in the mining districts of South Dakota.

County.	Gold.	Silver.	Copper.	Lead.	Iron.	Rare metals.	Total.
Custer	4	1	....	....	1	....	6
Lawrence	5	....	....	2	....	2	9
Pennington	5	....	2	1	1	2	11
	14	1	2	3	2	4	26

MINING DISTRICTS IN SOUTH DAKOTA.

[See Pl. XII. Additional references will be found in Mineral Resources for 1910 and 1911.]

CUSTER COUNTY.

1. **Chilkoot.** Au, Cu.
   10 miles E. Custer, C. B. & Q. R. R.
   Pre-Cambrian complex (?).
   Veins, impregnations (?).
   Top. sheet Hermosa.
2. **Custer.** Au. (D, Pl.)
   5 miles S. Custer, C. B. & Q. R. R.
   Pre-Cambrian complex.
   Veins, impregnations.
   Min. Res. 1907, pt. 1, p. 429.
   1908, pt. 1, p. 535.
   1909, pt. 1, p. 452.
   Top. sheet Harney Peak.
3. **French Creek.** Au.
   Custer station, C. B. & Q. R. R.
   Pre-Cambrian complex (?).
   Veins, impregnations (?).
   Min. Res. 1905, p. 295.
   Top. sheets Harney Peak, Hermosa.
4. **Iron Mountains.** Fe, Ag, Pb.
   12 miles ENE. Custer, C. B. & Q. R. R.
   Pre-Cambrian complex.
   Veins, impregnations.
   Top. sheet Hermosa.
5. **Junction.** Au. (D, Pl.)
   10 miles NW. Custer, C. B. & Q. R. R.
   Pre-Cambrian complex.
   Veins, impregnations.
   Top. sheet Harney Peak.

CUSTER COUNTY—Continued.

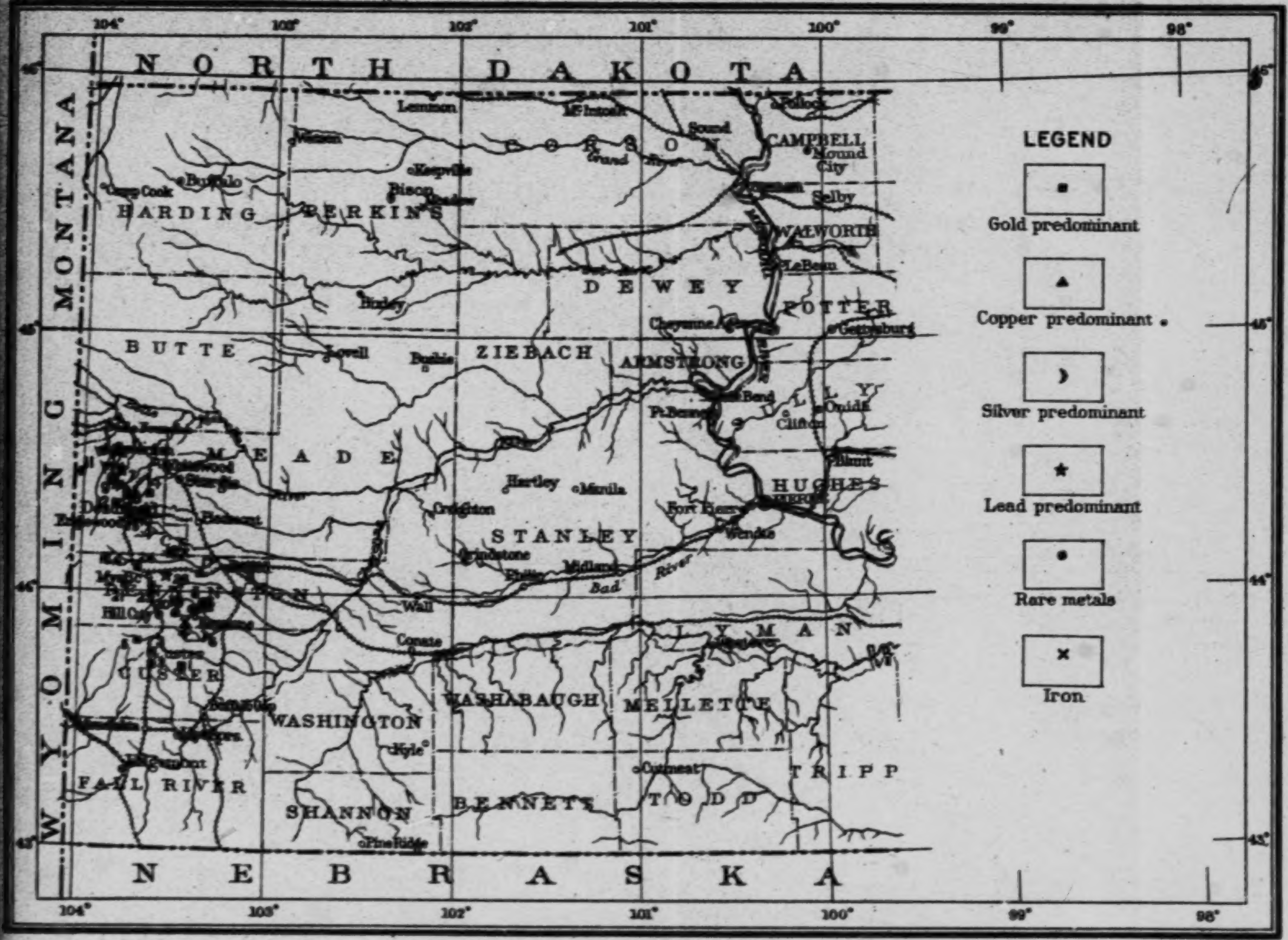
6. **Spokane.** Ag, Pb.
    8 miles W. Hermosa, C. & N. W. R. R.
    Pre-Cambrian complex.
    Veins, impregnations.
    Top. sheet Hermosa.

LAWRENCE COUNTY.

7. **Carbonate.** Pb, Ag, Au.
    2 miles E. Maurice, C. B. & Q. R. R.
    Carboniferous sediments cut by porphyry.
    Replacements and veins.
    Irving, J. D., Ore deposits of the northern Black Hills, South Dakota: Bull. 225, 1904, pp. 123–140.
    Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
    Min. Res. 1907, pt. 1, p. 431.
    Top. sheet Spearfish.
8. **Deadwood.** Au, Ag, W. (D, Pl.)
    Deadwood station, C. B. & Q. R. R., C. & N. W. R. R.
    Algonkian schists and Cambrian sediments.
    Veins and quartz-bearing conglomerate.
    Irving, J. D., Ore deposits of the northern Black Hills, South Dakota: Bull. 225, 1904, pp. 123–140.
    Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
    Top. sheet Sturgis.
9. **Elk Mountain (Ragged Top).** Au.
    10 miles S. Spearfish, C. B. & Q. R. R.
    Carboniferous limestone cut by phonolite.
    Veins.
    Irving, J. D., Ore deposits of the northern Black Hills, South Dakota: Bull. 225, 1903, pp. 123–140.
    Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
    Min. Res. 1906, p. 322.
    Top. sheet Spearfish.
10. **Galena (Strawberry Gulch).** Pb, Ag, Au. (D, Pl.)
    4 miles NNW. Elk City, 2 miles E. siding, C. B. & Q. R. R.
    Algonkian schists cut by porphyry.
    Impregnation.
    Irving, J. D., Ore deposits of the northern Black Hills, South Dakota: Bull. 225, 1904, pp. 123–140.
    Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
    O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 60–62.
    Min. Res. 1887, p. 110.
        1906, pp. 321–322.
        1907, pt. 1, p. 431.
        1908, pt. 1, p. 538.
    Top. sheet Sturgis.
11. **Nigger Hill (Tinton).** Sn, W. (D, Pl.)
    9 miles W. Terry, C. B. & Q. R. R.
    Algonkian schists cut by pegmatite.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 507 PLATE XII


NORTH DAKOTA
MONTANA
WYOMING
NEBRASKA
HARDING
PERKINS
CORSON
CAMPBELL
WALWORTH
DEWEY
POTTER
BUTTE
ZIEBACH
ARMSTRONG
SULLY
MEADE
STANLEY
HUGHES
PENNINGTON
LYMAN
CUSTER
WASHINGTON
WASHABAUGH
MELLETTE
FALL RIVER
SHANNON
BENNETT
TODD
TRIPP
Lemmon
McIntosh
Sound
Pollock
Mound City
Selby
LeBeau
Gettysburg
Cheyenne Agency
Camp Cook
Buffalo
Keepville
Bison
Bixby
Lovell
Hartley
Midland
Wall
Conata
Kyle
Pine Ridge
Pt. Bennett
Onida
Clifton
Blunt
Fort Pierre
Wendte
Philip
Grindstone
Creighton
Hill City
Custer
Edgemont
Sturgis
Bad River
LEGEND
Gold predominant
Copper predominant
Silver predominant
Lead predominant
Rare metals
Iron
104°
103°
102°
101°
100°
99°
98°
46°
45°
44°
43°

LIST OF MINING DISTRICTS

CUSTER COUNTY

1. Chilkoot
2. Custer
3. French Creek
4. Iron Mountains
5. Junction
6. Spokane

LAWRENCE COUNTY

7. Carbonate
8. Deadwood
9. Elk Mountain (Ragged Top)
10. Galena (Strawberry Gulch)
11. Nigger Hill (Tinton)
12. Ruby (Portland)
13. Spearfish
14. Two Bit Creek (Spruce Gulch)
15. Whitewood (Lead, Garden, Homestake, Lead City)

PENNINGTON COUNTY

16. Black Hills
17. Blue Lead
18. Harney Peak
19. Hat Mound
20. Hill City
21. Hornblende
22. Keystone
23. Mystic
24. Rochford
25. Rockerville
26. Silver

MAP OF PART OF SOUTH DAKOTA, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

LAWRENCE COUNTY—Continued.

11. **Nigger Hill (Tinton)**—Continued.
Veins (?).
Irving, J. D., Ore deposits of the northern Black Hills, South Dakota: Bull. 225, 1904, pp. 123–140.
Hess, F. L., and Graton, L. C., The occurrence and distribution of tin: Bull. 260, 1905, pp. 164–165.
Hess, F. L., Tin, tungsten, and tantalum deposits of South Dakota: Bull. 380, 1909, pp. 131–163.
O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 42, 43, 62–72.
Todd, J. E., A preliminary report on the geology of South Dakota: Bull. South Dakota Geol. Survey No. 1, 1895, p. 149.
Min. Res. 1883–84, p. 613.
1885, pp. 370–371.
1887, pp. 134–136.
1888, p. 148.
1894 (Sixteenth Ann. Rept., pt. 3), p. 530.
1903, p. 336.
1909, pt. 1, p. 588.

12. **Ruby (Portland).** Au, Ag.
6 miles NW. Englewood, C. B. & Q. R. R.
Cambrian sediments cut by porphyry.
Veins.
Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
Min. Res. 1906, pp. 321–322.

13. **Spearfish.** Sn.
Station C. B. & Q. R. R.
Pegmatite.
Top. sheet Spearfish.
O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 43–45.

14. **Two Bit Creek (Spruce Gulch).** Au, Ag. (D, Pl.)
5 miles E. Deadwood, C. B. & Q. R. R., G. N. R. R.
Cambrian sediments cut by acidic intrusives.
Veins.
Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
Min. Res. 1907, pt. 1, p. 431.
Top. sheet Sturgis.

15. **Whitewood (Lead, Garden, Homestake, Lead City).** Au, Ag, W.
Station C. B. & Q. R. R., G. N. R. R.
Algonkian schists cut by acidic intrusives.
Veins and impregnations.
Irving, J. D., Ore deposits of the northern Black Hills, South Dakota: Bull. 225, 1904, pp. 123–140.
Irving, J. D., and Emmons, S. F., Economic resources of the northern Black Hills: P. P. 26, 1904.
Hess, F. L., Tin, tungsten, and tantalum deposits of South Dakota: Bull. 380, 1909, pp. 131–163.
O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 11, 41.
Todd, J. E., A preliminary report on the geology of South Dakota: Bull. South Dakota Geol. Survey No. 1, 1895, pp. 143–147.

LAWRENCE COUNTY—Continued.

15. **Whitewood (Lead, Garden, Homestake, Lead City)**—Continued.
  Min. Res. 1904, pp. 331–333.
    1905, p. 295.
    1906, p. 321.
    1907, pt. 1, pp. 429–431.
    1908, pt. 1, pp. 536–538.
    1909, pt. 1, p. 453.
  Top. sheet Spearfish.

PENNINGTON COUNTY.

16. **Black Hills.** Cu.
  10 miles W. Rochford, C. B. & Q. R. R.
  Pre-Cambrian schists.
  Veins and impregnations.
17. **Blue Lead.** Cu.
  Big Bend station, R. C. B. H. & W. R. R.
  Pre-Cambrian schists.
  Veins and impregnations.
  O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 53–56.
18. **Harney Peak.** Sn, W, lithium.
  7 miles SSE. Hill City, C. B. & Q. R. R.
  Pegmatite.
  Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept., pt. 3, 1895, pp. 530–535.
  Hess, F. L., and Graton, L. C., The occurrence and distribution of tin: Bull. 260, 1905, pp. 164–165.
  Hess, F. L., Tin, tungsten, and tantalum deposits of South Dakota: Bull. 380, 1909, pp. 131–163.
  O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 62–72.
  Todd, J. E., A preliminary report on the geology of South Dakota: Bull. South Dakota Geol. Survey No. 1, 1895, pp. 149–150.
  Min. Res. 1883–84, pp. 611–613.
    1885, p. 370.
    1887, pp. 136–138.
    1888, pp. 144–148.
    1889–90, pp. 120–121.
    1891, p. 164.
    1894 (Sixteenth Ann. Rept., pt. 3), pp. 530–535.
    1903, p. 336.
    1906, p. 323.
    1908, pt. 1, pp. 721–722, 749.
    1909, pt. 1, p. 588.
  Top. sheet Harney Peak
19. **Hat Mound.** Fe.
  6 miles ENE. Pactola, R. C. B. H. & W. R. R.
20. **Hill City.** Au. (D, Pl.)
  Station C. B. & Q. R. R.
  Pre-Cambrian complex.
  Stream gravels, veins.
  Hess, F. L., Tin, tungsten, and tantalum deposits of South Dakota: Bull. 380, 1909, pp. 131–163.

PENNINGTON COUNTY—Continued.

20. **Hill City**—Continued.
    Min. Res. 1907, pt. 1, p. 432.
    1908, pt. 1, p. 538.
    1909, pt. 1, p. 454.
    Top. sheet Harney Peak.
21. **Hornblende.** Au, Ag.
    10 miles SW. Rochford, C. B. & Q. R. R.
    Pre-Cambrian complex.
    Veins and impregnations.
    Min. Res. 1906, p. 297.
    1907, pt. 1, p. 432.
    1908, pt. 1, p. 539.
    1909, pt. 1, p. 454.
22. **Keystone.** Sn, Au, Ag. (D, Pl.)
    10 miles ESE. Hill City, C. B. & Q. R. R.
    Pre-Cambrian complex cut by pegmatite.
    Veins and lenses.
    Min. Res. 1883-84, pp. 602-611.
    1885, p. 370.
    1887, pp. 136-138.
    1888, pp. 149-151
    1905, p. 297.
    1906, p. 323.
    1907, pt. 1, p. 432.
    1908, pt. 1, p. 538.
    1909, pt. 1, p. 454.
    Top. sheet Hermosa.
23. **Mystic.** Au. (D, Pl.)
    Station C. B. & Q. R. R.
    Pre-Cambrian complex.
    Veins, impregnations.
    Min. Res. 1908, pt. 1, p. 538.
24. **Rochford.** Au.
    Station C. B. & Q. R. R.
    Pre-Cambrian complex.
    Veins, impregnations.
    Min. Res. 1907, pt. 1, p. 432.
25. **Rockerville.** Au, Cu. (D, Pl.)
    14 miles S. Rapid City, R. C. B. H. & W. R. R., C. & N. W. R. R.
    Pre-Cambrian complex.
    Veins, impregnations.
    O'Harra, C. C., Mineral resources of South Dakota: Bull. South Dakota Geol. Survey No. 3, 1902, pp. 45-46.
    Min. Res. 1908, pt. 1, p. 539.
    Top. sheet Hermosa.
26. **Silver.** Pb, Ag, Sb.
    Silver City station, R. C. B. H. & W. R. R.
    Pre-Cambrian complex.
    Veins, impregnations.

TEXAS.

In the trans-Pecos country of Texas there are only three counties in which metal mining is carried on to any extent. Eleven districts are known to the Geological Survey. Four of these produce silver as the predominant metal, three quicksilver, two copper, one zinc, and one tin.

Distribution of the predominant metals produced in the mining districts of Texas.

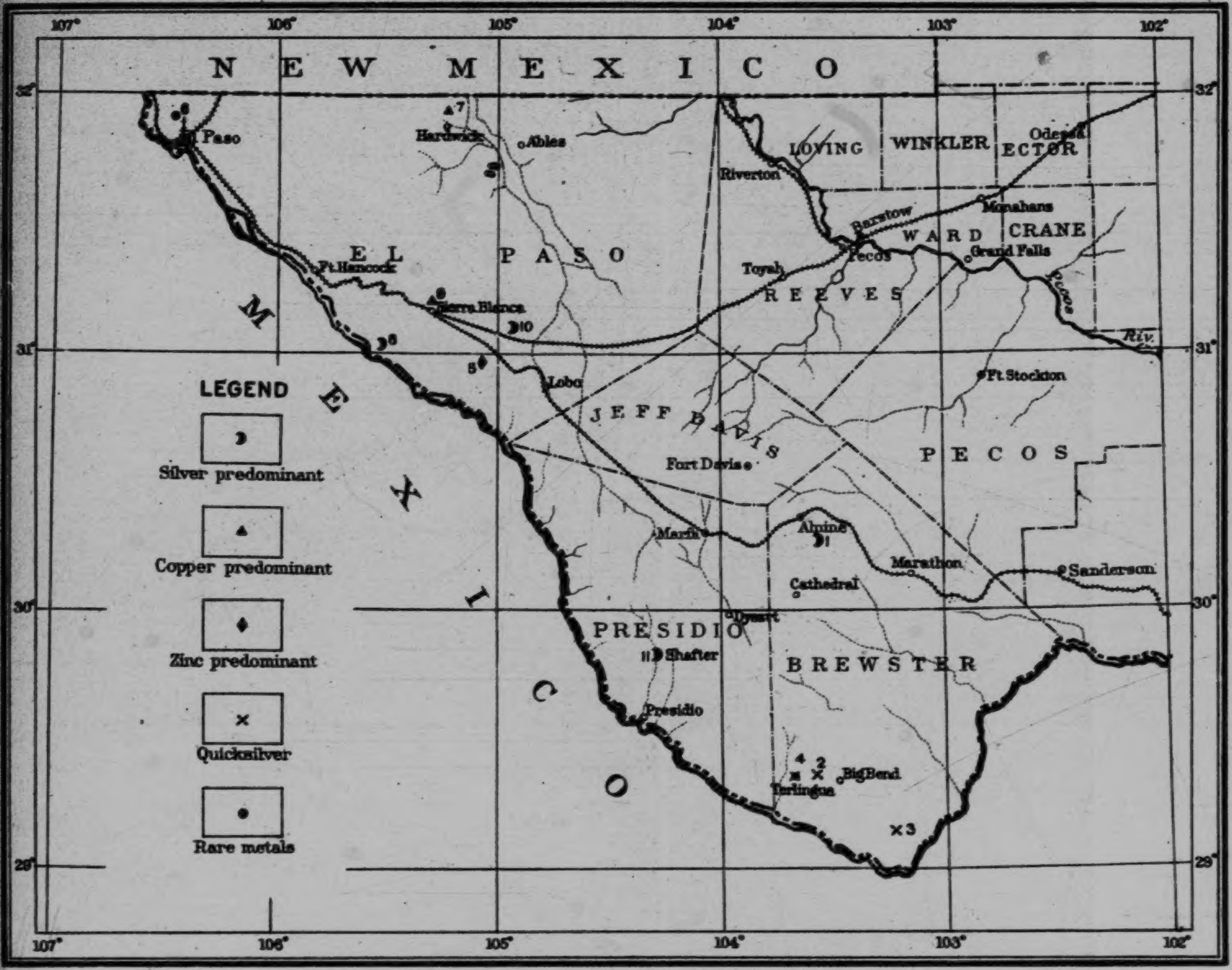
County.	Silver.	Copper.	Quicksilver.	Zinc.	Rare metals.	Total.
Brewster	1		3			4
El Paso	2	2		1	1	6
Presidio	1					1
	4	2	3	1	1	11

MINING DISTRICTS IN TEXAS.

[See Pl. XIII. Additional references will be found in Mineral Resources for 1910 and 1911.]

BREWSTER COUNTY.

1. **Alpine.** Ag, Pb.
   Station S. P. R. R.
   Min. Res. 1908, pt. 1, p. 540.
   Top. sheet Alpine.
2. **Chisos and Study Butte.** Hg.
   120 miles SE. Marfa, S. P. R. R.
   Cretaceous sediments cut by Tertiary volcanics.
   Veins.
   Min. Res. 1905, pp. 394–397.
   1906, pp. 493–494.
   1907, pt. 1, pp. 680–682.
   Top. sheet Chisos Mountains.
3. **Mariscal.** Hg.
   115 miles SE. Marathon, S. P. R. R.
   Cretaceous sediments cut by Tertiary intrusives.
   Veins.
   Min. Res. 1894 (Sixteenth Ann. Rept., pt. 3), pp. 601–604.
   1905, pp. 394–397.
   1906, pp. 493–494.
   1907, pt. 1, pp. 680–682.
   Top. sheet Chisos Mountains.
4. **Terlingua.** Hg.
   108 miles SSE. Marfa, S. P. R. R.
   Cretaceous sediments cut and capped by Tertiary volcanics.
   Veins, replacements.
   Hillebrand, W. F., and Schaller, W. T., Mercury minerals from Terlingua, Tex.: Bull. 405, 1909.


107°
106°
105°
104°
103°
102°
32°
31°
30°
29°
NEW MEXICO
El Paso
Hardwick
Ables
LOVING
WINKLER
ECTOR
Odessa
Riverton
Monahans
Barstow
WARD
CRANE
Pecos
Grand Falls
Toyah
Pecos Riv.
EL PASO
Ft. Hancock
Sierra Blanca
REEVES
MEXICO
Lobo
Ft. Stockton
JEFF DAVIS
Fort Davis
PECOS
Marfa
Alpine
Marathon
Sanderson
Cathedral
Dryden
PRESIDIO
Shafter
BREWSTER
Presidio
Terlingua
Big Bend
LEGEND
Silver predominant
Copper predominant
Zinc predominant
Quicksilver
Rare metals

LIST OF MINING DISTRICTS

BREWSTER COUNTY

1. Alpine
2. Chisos and Study Butte
3. Mariscal
4. Terlingua

EL PASO COUNTY

5. Eagle Mountain
6. El Paso (Franklin Mts.)
7. Guadalupe Mountains
8. Quitman Mts. (Bonanza)
9. Sierra Blanca (Lascar)
10. Sierra Diablo (Hazel)

PRESIDIO COUNTY

11. Shafter

MAP OF WESTERN TEXAS, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

BREWSTER COUNTY—Continued.

4. **Terlingua**—Continued.
Min. Res. 1894 (Sixteenth Ann. Rept., pt. 3), pp. 601–604.
1899 (Twenty-first Ann. Rept., pt. 6), pp. 278–280.
1905, pp. 394–397.
1906, pp. 493–494.
1907, pt. 1, pp. 680–682.
1909, pt. 1, pp. 555–556.
Top. sheets Terlingua, Terlingua special.

EL PASO COUNTY.

5. **Eagle Mountains.** Zn.
5 miles SW. Torbet, S. P. R. R.
Carboniferous sediments.
Min. Res. 1908, pt. 1, p. 541.
Top. sheet Eagle Mountains.

6. **El Paso (Franklin Mountains).** Sn.
10 miles N. El Paso, A. T. & S. F. R. R., S. P. R. R., E. P. S. W. R. R.
Granite.
Veins.
Richardson, G. B., Tin in the Franklin Mountains, Texas: Bull. 285, 1906, pp. 146–149.
Weed, W. H., The El Paso tin deposits: Bull. 178, 1901.
——— Tin deposits at El Paso, Tex.: Bull. 213, 1903, pp. 99–102.
Min. Res. 1905, p. 305.
1906, p. 544.
1908, pt. 1, p. 541.
1909, pt. 1, p. 589.
Top. sheet El Paso.
Folio 166, 1909.

7. **Guadalupe Mountains.** Cu.
65 miles NNE. Sierra Blanca, S. P. R. R.
Paleozoic sediments.
Disseminations.
Min. Res. 1905, p. 305.
1907, pt. 1, p. 433.
1908, pt. 1, p. 541.

8. **Quitman Mountains (Bonanza).** Ag, Pb, Zn.
20 miles SW. Sierra Blanca, S. P. R. R.
Granite, limestone, greenstone.
Vein.
Min. Res. 1908, pt. 1, p. 541.
Top. sheet Sierra Blanca.

9. **Sierra Blanca (Lascar).** Cu, Pb, Ag.
Allamore station, T. & P. R. R.
Pre-Cambrian sediments, porphyry.
Contact metamorphic.
Min. Res. 1908, pt. 1, p. 541.
1909, pt. 1, p. 455.
Top. sheet Sierra Blanca.

10. **Sierra Diablo (Hazel).** Ag, Cu, Pb.
10 miles NW. Allamore, T. & P. R. R.
Pre-Cambrian sediments.
Veins and impregnations.

EL PASO COUNTY—Continued.

10. **Sierra Diablo (Hazel)**—Continued.
    Min. Res. 1905, p. 305.
    1908, pt. 1, p. 541.
    1909, pt. 1, p. 455.
    Top. sheet Sierra Blanca.

PRESIDIO COUNTY.

11. **Shafter.** Ag (Pb, Au).
    44 miles SSW. Marfa, S. P. R. R.
    Carboniferous sediments cut by porphyry.
    Replacements.
    Min. Res. 1905, p. 305.
    1906, p. 334.
    1907, pt. 1, p. 433.
    1908, pt. 1, pp. 539, 541
    1909, pt. 1, p. 455.
    Top. sheet Shafter.

UTAH.

Twenty-one counties of Utah contain 86 mining districts which are producing according to statistics collected by the United States Geological Survey. Gold is the predominant metal in 22 districts, silver in 20, copper in 15, lead in 14, and iron in 6. The predominant metal in 6 districts is not certain, and of 3 camps producing rare metals 2 have deposits of uranium and vanadium and 1 antimony.

Distribution of the predominant metals produced in the mining districts of Utah.

County.	Gold.	Silver.	Copper.	Lead.	Iron and manganese.	Rare metals.	Unknown.	Total.
Beaver	3	3	2	5				13
Boxelder	1	1	3					5
Cache				1			1	2
Emery			1			1		2
Garfield	1					1		2
Grand	2				1	1		4
Iron	2				2			4
Juab	2	3	2					7
Millard		1						1
Morgan			1	4				2
Piute	2							2
Salt Lake		2	1				1	4
San Juan	2							2
Sevier		1		1				2
Summit		1						1
Tooele	2	4	2	5			2	15
Uinta	2				1			3
Utah	1	3		1			2	7
Wasatch	2		1		1			4
Washington		1	1		1			3
Weber			1					1
	22	20	15	14	6	3	6	86

MINING DISTRICTS IN UTAH.

[See Pl. XIV. Additional references will be found in Mineral Resources for 1910 and 1911.]

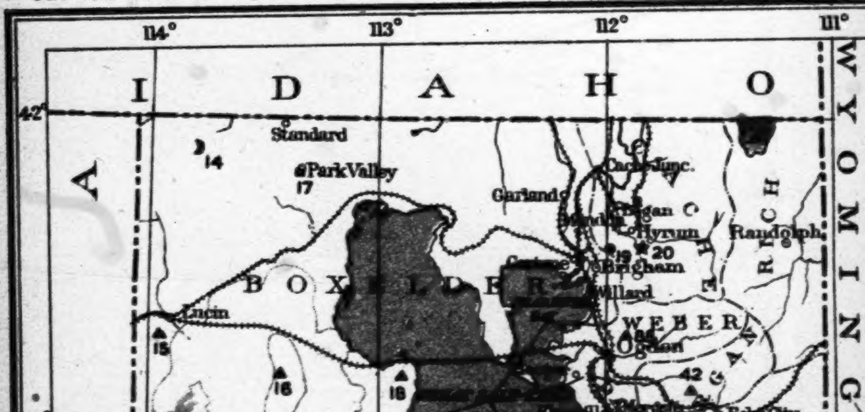
BEAVER COUNTY.

1. **Beaver Lake.** Ag, Cu, Pb.
   12 miles W. Smyths, S. P. L. A. & S. L. R. R.
   Paleozoic sediments cut by monzonite.
   Disseminations, replacements.
   Min. Res. 1905, p. 315.
   1907, pt. 1, p. 444.
   Top. sheet Frisco special.
2. **Bradshaw.** Au, Ag, Pb, Fe.
   10 miles E. Milford, S. P. L. A. & S. L. R. R.
   Paleozoic sediments cut by acidic intrusives.
   Replacements, veins.

BEAVER COUNTY—Continued.

2. **Bradshaw**—Continued.
    Min. Res. 1908, pt. 1, p. 554.
        1909, pt. 1, p. 446.
    Top. sheet Beaver.
3. **Granite.** Pb, Ag, Cu, Bi.
    25 miles ENE. Milford, S. P. L. A. & S. L. R. R.
    Paleozoic limestone cut by acidic intrusives.
    Contact metamorphic.
    Min. Res. 1883-84, pp. 654-655.
        1907, pt. 1, p. 444.
    Top. sheet Beaver.
4. **Indian Peak.** Pb, Ag.
    45 miles NW. Lund, S. P. L. A. & S. L. R. R.
    Tertiary volcanics.
    Veins.
    Min. Res. 1907, pt. 1, p. 444.
5. **Lincoln (Jarloose).** Pb, Ag, Cu, Au, Zn.
    20 miles SE. Milford, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by acidic intrusives, Tertiary volcanics.
    Replacements.
    Min. Res. 1907, pt. 1, p. 444.
        1908, pt. 1, p. 554.
        1909, pt. 1, p. 466.
    Top. sheet Beaver.
6. **Newton.** Au, Ag.
    55 miles E. Milford, S. P. L. A. & S. L. R. R.
    Veins.
    Min. Res. 1908, pt. 1, p. 554.
        1909, pt. 1, p. 466.
    Top. sheet Beaver.
7. **North Star.** Ag, Au, Cu, Pb, Zn.
    12 miles SW. Milford, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by monzonite.
    Replacements.
8. **Pine Grove.** Au, Ag.
    40 miles NW. Lund, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by porphyry.
    Replacements.
9. **Preuss (Newhouse).** Cu, Au, Ag.
    Newhouse station, S. P. L. A. & S. L. R. R.
    Paleozöic sediments cut by monzonite.
    Impregnations, replacements, contact metamorphic.
    Emmons, S. F., The Cactus copper mine, Utah: Bull. 260, 1905, pp. 242-248.
    Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 121-122.
    Min. Res. 1904, p. 276.
        1905, p. 315.
        1906, pp. 341-343.
        1907, pt. 1, pp. 444-445, 619.
        1908, pt. 1, pp. 218, 554.
        1909, pt. 1, p. 466.
    Top. sheet Frisco special.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR


114°
113°
112°
111°
42°
41°
IDAHO
WYOMING
BOX ELDER
WEBER
RICH
TOOELE
SALT LAKE
Standard
Park Valley
Garland
Cache Junc.
Logan
Hyrum
Randolph
Brigham
Willard
Ogden
Lucin
Echo City
Farmington
Grass Creek
Coalville
SALT LAKE CITY
Park City
Alta
Heber
Grantsville
Tooele
Bingham
Lehi
14
15
16
17
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41
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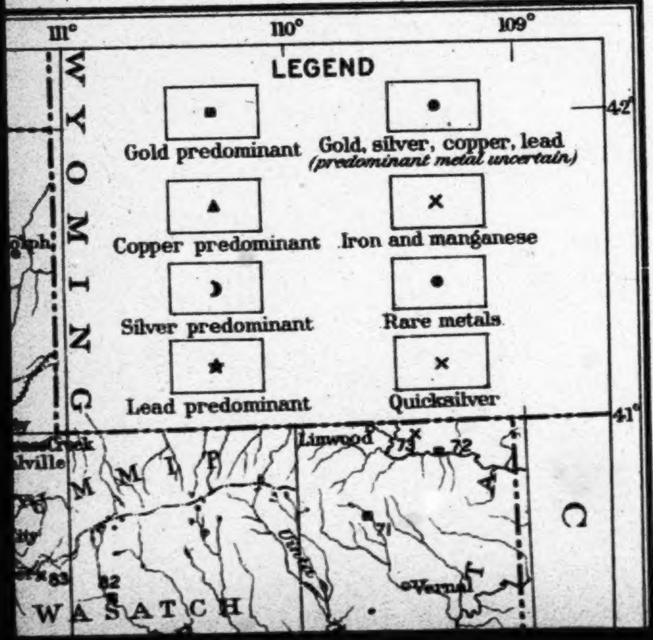
74
76
83
84


111°
110°
109°
42°
41°
LEGEND
Gold predominant
Gold, silver, copper, lead (predominant metal uncertain)
Copper predominant
Iron and manganese
Silver predominant
Rare metals
Lead predominant
Quicksilver
WYOMING
Linwood
73
72
71
Uinta
Vernal
83
82
WASATCH
C

LIST OF MINING DISTRICTS

BEAVER COUNTY

1. Beaver Lake
2. Bradshaw
3. Granite
4. Indian Peak
5. Lincoln (Jarloose)
6. Newton
7. North Star
8. Pine Grove
9. Preuss (Newhouse)
10. Rocky
11. Frisco
12. Star
13. Washington

BOXELDER COUNTY

14. Ashbrook
15. Lucin
16. Newfoundland
17. Park Valley
18. Promontory

CACHE COUNTY

SALT LAKE COUNTY

46. Big Cottonwood
47. Hot Springs
48. Little Cottonwood (Alta)
49. West Mountain (Bingham)

SAN JUAN COUNTY

50. Blue Mountains (Monticello)
51. Omitted
52. Bluff

SEVIER COUNTY

53. Henry
54. Salina Creek

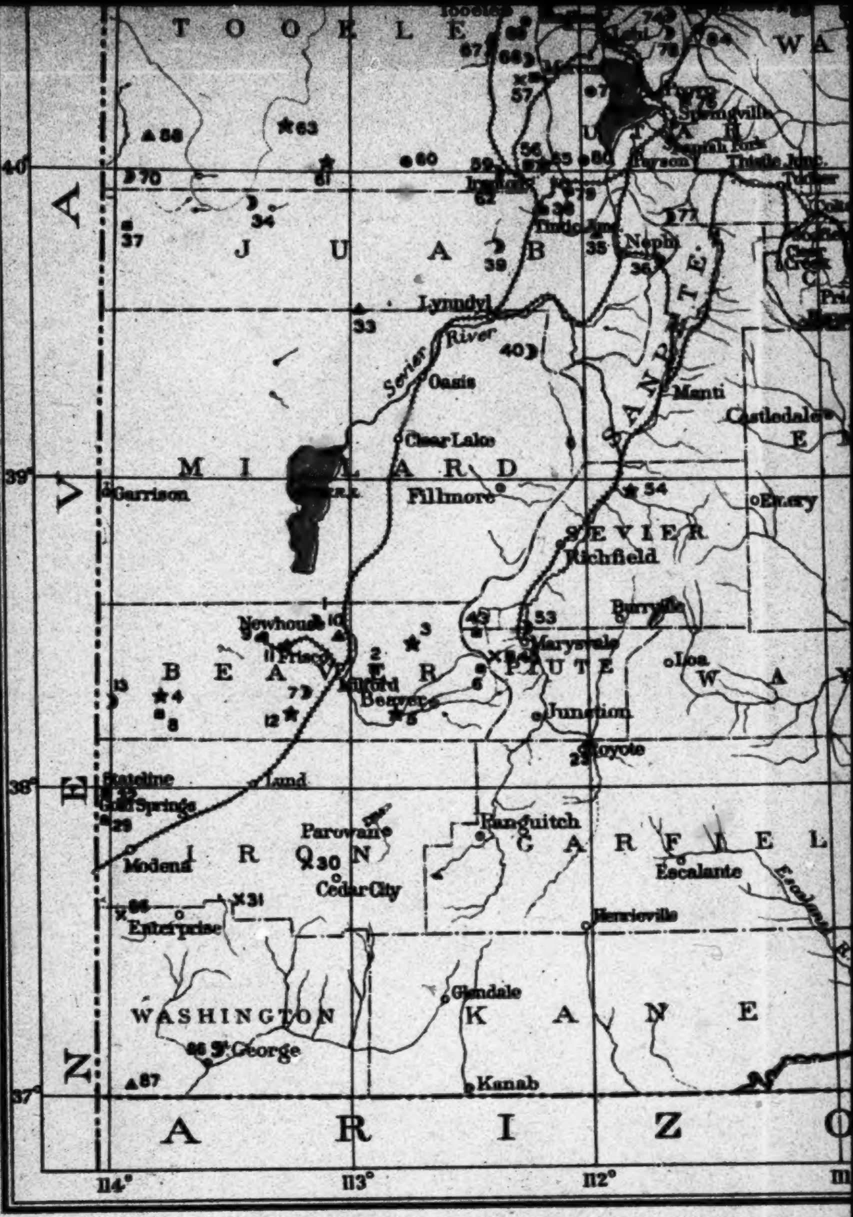
SUMMIT COUNTY

55. Uinta (Park City)

TOOELE COUNTY

56. Blue Bells

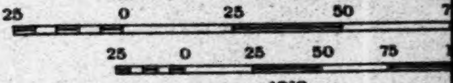
Camp Floyd (Mercur)


T O O E L E
WA
Lehi
Provo
Springville
U T A H
Spanish Fork
Thistle Junc.
Payson
Tucker
Ibapah
Tintic Junc.
Nephi
J U A B
Clear Creek
Lynndyl
Sevier River
Oasis
S A N P E T E
Manti
Castledale
Clear Lake
M I L L A R D
Fillmore
Garrison
Emery
S E V I E R
Richfield
Newhouse
Frisco
Burrville
Marysvale
B E A V E R
P I U T E
Loa
Milford
Beaver
W A Y
Junction
Coyote
Stateline
Gold Springs
Lund
Panguitch
Parowan
I R O N
G A R F I E L
Modena
Cedar City
Escalante
Escalante R.
Enterprise
Henrieville
Glendale
WASHINGTON
K A N E
St George
Kanab
A R I Z O
N E V A D A
40°
39°
38°
37°
114°
113°
112°
111

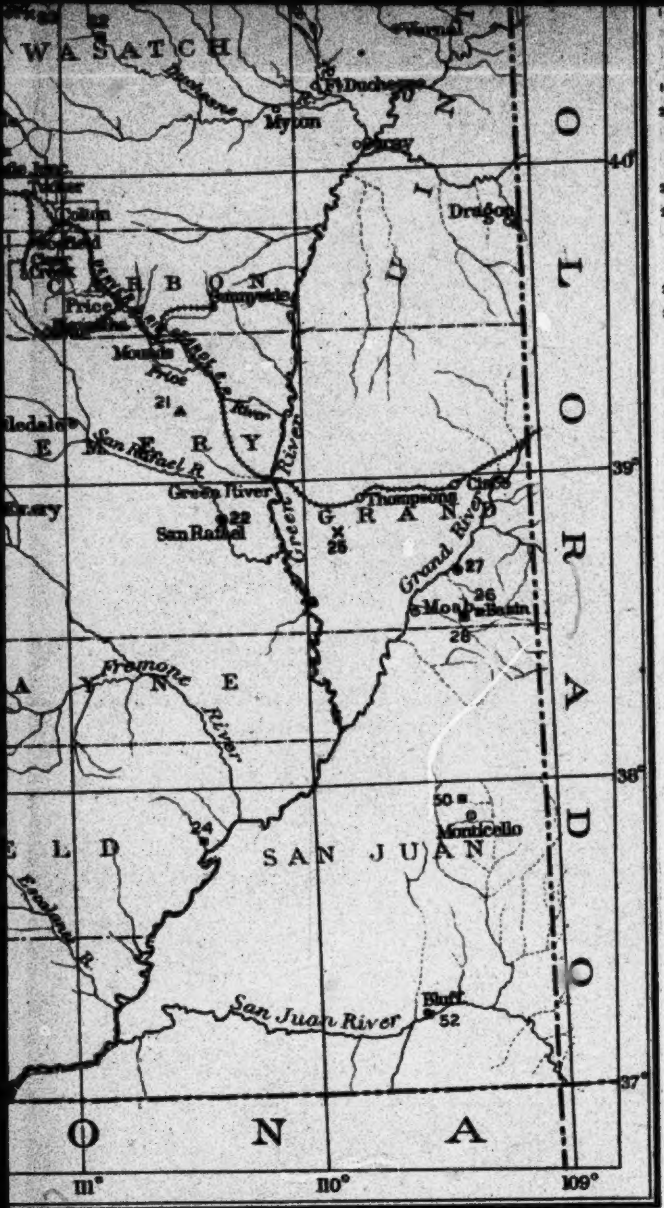
MAP OF UTAH, SHOWING LOCATION O

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INC


25
0
25
50
7
25
0
25
50
75

1912


WASATCH
Duchesne
Myton
Ouray
Dragon
CARBON
Price
Sunnyside
Mounds
Price River
21
EMERY
San Rafael R.
Green River
Green River
San Rafael
22
GRAND
25
Thompsons
Cisco
Grand River
27
Moab
26
Basin
28
WAYNE
Fremont River
Escalante R.
24
SAN JUAN
50
Monticello
Bluff
52
San Juan River
COLORADO
ARIZONA
40°
39°
38°
37°
111°
110°
109°
JULIUS BIEN CO. LITH. N.Y.

ON OF MINING DISTRICTS

TO 1 INCH

75 100 Miles

75 100 Kilometers

18. Promontory

CACHE COUNTY

19. Boxelder
20. Paradise (La Plata)

EMERY COUNTY

21. Emery (Lost Springs)
22. San Rafael

GARFIELD COUNTY

23. Coyote Creek
24. White Canyon (Hite)

GRAND COUNTY

25. Little Grand
26. Miners Basin
27. Richardson
28. Wilson Mesa

IRON COUNTY

29. Gold Springs
30. Iron Springs
31. Pinto Iron
32. Stateline

JUAB COUNTY

33. Detroit (Joy)
34. Fish Springs
35. Mona
36. Mount Nebo
37. Spring Creek
38. Tintic
39. West Tintic

MILLARD COUNTY

40. Leamington (Oak City)

MORGAN COUNTY

41. Argenta (Mill Creek)
42. Morgan

PIUTE COUNTY

43. Kimberly (Gold Mtn.)
44. Omitted
45. Ohio (Marysvale, Gold Mountains)

TOOELE COUNTY

56. Blue Bells
57. Camp Floyd (Mercur)
58. Clifton (Gold Hill)
59. Columbia
60. Desert
61. Dugway
62. Erikson
63. Granite Mountains
64. Lakeside
65. North Tintic
66. Ophir
67. Rush Valley (Stockton)
68. Silver Islet
69. Tooele
70. Willow Springs

UINTA COUNTY

71. Carbonate
72. Green River (Cub Creek)
73. Spring Creek

UTAH COUNTY

74. American Fork
75. Lehi
76. Provo
77. Santaquin
78. Silver Lake
79. Tintic
80. Utah

WASATCH COUNTY

81. Blue Ledge
82. North Fork
83. Rhodes Plateau (Woodland)
84. Snake Creek

WASHINGTON COUNTY

85. Bull Valley
86. Harrisburg (Silver Reef)
87. Tutsagubet

WEBER COUNTY

88. Sierra Madre

BEAVER COUNTY—Continued.

10. **Rocky.** Cu, Au, Ag, Fe.
    10 miles NW. Milford, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by monzonite.
    Contact metamorphic.
11. **Frisco.** Pb, Cu, Ag, Au, Zn.
    Station S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by monzonite and capped by Tertiary volcanics.
    Replacements, veins.
    Min. Res. 1882, pp. 308–309.
    1883–84, pp. 416–418.
    1888, p. 59.
    1904, p. 276.
    1905, p. 315.
    1906, pp. 341–343, 408.
    1907, pt. 1, pp. 218, 444–445, 619.
    1908, pt. 1, pp. 554–555.
    1909, pt. 1, pp. 172, 466–467.
    Top. sheet Frisco special.
12. **Star.** Pb, Ag, Cu, Au, Zn.
    20 miles SSW. Milford, S. P. L. A. & S. L. R. R.
    Paleozoic sediments cut by quartz monzonite.
    Replacements, veins.
    Min. Res. 1905, p. 315.
    1906, pp. 343, 476.
    1907, pt. 1, pp. 445–446.
    1908, pt. 1, p. 555.
    1909, pt. 1, p. 467.
13. **Washington.** Ag, Cu, Pb, Au.
    50 miles NW. Lund, S. P. L. A. & S. L. R. R.
    Tertiary volcanics.
    Veins.

BOXELDER COUNTY.

14. **Ashbrook.** Ag, Au.
    83 miles S. Burley, Idaho, O. S. L. R. R.
15. **Lucin.** Cu (Au, Ag, Pb).
    8 miles E. Tecoma, S. P. R. R.
    Paleozoic sediments.
    Replacements.
    Min. Res. 1903, p. 343.
    1907, pt. 1, p. 446.
    1908, pt. 1, pp. 555–556.
    1909, pt. 1, pp. 172, 467.
16. **Newfoundland.** Cu, Bi.
    45 miles ESE. Lucin, S. P. R. R.
    Min. Res. 1904, p. 375.
17. **Park Valley.** Au, Ag, Cu, Pb.
    13 miles NW. Kelton, S. P. R. R.
    Min. Res. 1905, p. 316.
    1906, p. 343.
    1907, pt. 1, p. 446.
    1908, pt. 1, p. 556.
    1909, pt. 1, p. 467.

BOXELDER COUNTY—Continued.

18. **Promontory.** Cu, Ag.
    Lakeside station, S. P. R. R.
    Min, Res. 1907, pt. 1, p. 464.

CACHE COUNTY.

19. **Boxelder.**
    10 miles SSW. Wellsville, O. S. L. R. R.
20. **Paradise (La Plata).** Pb, Ag.
    5 miles S. Hyrum, O. S. L. R. R.
    Min. Res. 1908, pt. 1, p. 556.

EMERY COUNTY.

21. **Emery (Lost Springs).** Cu, Pb, Au, Ag.
    10 miles W. Woodside, D. & R. G. R. R.
    Min. Res. 1906, p. 344.
    Top. sheet Price River.
22. **San Rafael.** V, Cu.
    18 miles SW. Green River, D. & R. G. R. R.
    Jurassic and Triassic sediments.
    Disseminations.
    Boutwell, J. M., Vanadium and uranium in Utah: Bull. 260, 1905, pp. 200–210.
    Hess, F. L., Carnotite near Green River, Utah, Bull. 530, 1912.
    Min. Res. 1904, p. 344.
        1907, pt. 1, p. 446.
    Top. sheet San Rafael.

GARFIELD COUNTY.

23. **Coyote Creek.** Sb.
    38 miles SSE. Marysvale, D. & R. G. R. R.
    Paleozoic and Mesozoic sediments capped by Tertiary volcanics.
    Disseminations.
    Richardson, G. B., Antimony in southern Utah: Bull. 340, 1908, pp. 253–256.
    Min. Res. 1883–84, pp. 643–644.
        1906, pp. 511–512.
        1907, pt. 1, p. 708.
    Top. sheet Escalante.
24. **White Canyon (Hite).** Au. (Pl.)
    85 miles SW. Richfield, D. & R. G. R. R.
    Stream gravels.
    Min. Res. 1906, p. 344.
        1908, pt. 1, p. 556.
        1909, pt. 1, p. 467.
    Top. sheet Henry Mountains.

GRAND COUNTY.

25. **Little Grande.** Mn.
    10 miles S. Little Grande, D. & R. G. R. R.
    Triassic sediments.
    Replacements.
    Harder, E. C., Manganese deposits of the United States: Bull. 427, 1910, pp. 145–146.
    Min. Res. 1907, pt. 1, p. 100.
        1908, pt. 1, p. 152.
    Top. sheet La Sal.

GRAND COUNTY—Continued.

26. **Miners Basin.** Au, Ag, Cu.
45 miles S. Cisco, D. & R. G. R. R.
Monzonite porphyry.
Veins, stockworks.
Hill, J. M., Notes on the northern La Sal Mountains, Grand County, Utah: Bull. 530, 1912.
Min. Res. 1905, p. 316.
1907, pt. 1, p. 446.
1908, pt. 1, p. 556.
1909, pt. 1, pp. 467–468.
Top. sheet La Sal.

27. **Richardson.** V.
27 miles S. Cisco, D. & R. G. R. R.
Triassic and Cretaceous sediments.
Replacements.
Boutwell, J. M., Vanadium and uranium in Utah: Bull. 260, 1905, pp. 203–207.
Hill, J. M., Notes on the northern La Sal Mountains, Grand County, Utah: Bull. 530, 1912.
Min. Res. 1904, p. 343.
Top. sheet La Sal.

28. **Wilson Mesa.** Au. (Pl.)
49 miles SE. Thompsons, D. & R. G. R. R.
Glacial (?) gravels.
Hill, J. M., Notes on the northern La Sal Mountains, Grand County, Utah: Bull. 530, 1912.
Min. Res. 1906, p. 344.
1908, pt. 1, p. 556.
1909, pt. 1, p. 468.
Top. sheet La Sal.

IRON COUNTY

29. **Gold Springs.** Au, Mn.
17 miles NW. Modena, S. P. L. A. & S. L. R. R.
Tertiary volcanics.
Veins.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 274.
Min. Res. 1906, pp. 344–345.
1907, pt. 1, pp. 100, 447.
1908, pt. 1, p. 557.
1909, pt. 1, p. 468.
Top. sheet St. George.

30. **Iron Springs.** Fe.
22 miles SSE. Lund, S. P. L. A. & S. L. R. R.
Paleozoic and Cretaceous sediments cut by andesite porphyry.
Contact metamorphic.
Leith, C. K., Iron ores in southern Utah: Bull. 225, 1904, pp. 229–237.
——— Iron ores of the western United States and British Columbia: Bull. 285, 1906, p. 199.
Leith, C. K., and Harder, E. C., The iron ores of the Iron Springs district, southern Utah: Bull. 338, 1908.
Min. Res. 1883–84, p. 288.
Top. sheets St. George, Iron Springs special.

IRON COUNTY—Continued.

31. **Pinto Iron.** Fe.
32 miles SSE. Modena, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by andesite.
Contact metamorphic.
Leith, C. K., Iron ores in southern Utah: Bull. 225, 1904, pp. 229-237.
——— Iron ores of the western United States and British Columbia: Bull. 285, 1906, p. 199.
Min. Res. 1883-84, p. 288.
Top. sheet St. George.

32. **Stateline.** Au, Ag, Pb.
17 miles NNW. Modena, S. P. L. A. & S. L. R. R.
Tertiary volcanics.
Veins.
Min. Res. 1906, p. 345.
1907, pt. 1, p. 447.
1908, pt. 1, p. 557.
1909, pt. 1, p. 468.

JUAB COUNTY.

33. **Detroit (Joy).** Cu, Au, Ag, Mn, Bi.
35 miles NNW. Oasis, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by granite.
Contact metamorphic.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 273; Bull. 427, 1910, p. 157.
Min. Res. 1905, p. 317.
1907, pt. 1, p. 100.
1908, pt. 1, p. 154.
1909, pt. 1, p. 468.

34. **Fish Springs.** Ag, Pb, Au.
65 miles NW. Oasis, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by porphyry.
Replacements (?).
Min. Res. 1905, p. 316.
1906, p. 345.
1907, pt. 1, p. 447.
1908, pt. 1, p. 557.
1909, pt. 1, p. 468.
Top. sheet Fish Springs.

35. **Mona.** Cu, Au, Ag (Sb).
Mona station S. P. L. A. & S. L. R. R.
Top. sheets Manti, Tintic special.
Folio 65, 1899.

36. **Mount Nebo.** Ag, Pb.
10 miles N. Nephi, S. P. L. A. & S. L. R. R., D. & R. G. R. R.
Min. Res. 1907, pt. 1, p. 447.
1908, pt. 1, p. 557.
1909, pt. 1, p. 468.
Top. sheet Manti.

37. **Spring Creek.** Au, Ag.
105 miles NW. Oasis, S. P. L. A. & S. L. R. R.
Min. Res. 1905, p. 317.
Top. sheet Fish Springs.

JUAB COUNTY—Continued.

38. Tintic. Au, Ag, Pb, Cu.
Station S. P. L. A. & S. L. R. R., D. & R. G. R. R.
Paleozoic sediments cut by monzonite.
Replacements and veins.
Tower, G. W., and Smith, G. O., Geology and mining industry of the Tintic district, Utah: Nineteenth Ann. Rept., pt. 3, 1899, pp. 601–776.
Min. Res. 1905, pp. 317–320, 355.
1906, pp. 345–348, 407–408, 449.
1907, pt. 1, pp. 447–452, 618–619.
1908, pt. 1, pp. 217, 557–561.
1909, pt. 1, pp. 172, 468–473.
Top. sheet Tintic special.
Folio 65, 1900.

39. West Tintic. Ag, Pb, Fe.
15 miles SW. Tintic Junction, S. P. L. A. & S. L. R. R., D. & R. G. R. R.
Paleozoic sediments cut by monzonite.
Replacements and veins.
Tower, G. W., and Smith, G. O., Geology and mining industry of the Tintic district, Utah: Nineteenth Ann. Rept., pt. 3, 1899, pp. 601–767.
Min. Res. 1883–84, p. 289.
1909, pt. 1, p. 473.
Top. sheet Sevier Desert.

MILLARD COUNTY.

40. Leamington (Oak City). Ag, Pb, Au.
12 miles S. Leamington, S. P. L. A. & S. L. R. R.
Min. Res. 1905, p. 320.
1906, p. 348.
1909, pt. 1, p. 473.
Top. sheet Sevier Desert.

MORGAN COUNTY.

41. Argenta (Mill Creek). Pb, Ag, Au, Fe.
20 miles S. Morgan, U. P. R. R.
Min. Res. 1883–84, p. 288.
1905, p. 320.
1906, p. 348.
1907, pt. 1, p. 453.
1908, pt. 1, p. 561.
1909, pt. 1, p. 473.
Top. sheet Salt Lake.

42. Morgan. Cu, Ag.
10 miles N. Morgan, U. P. R. R.
Min. Res. 1907, pt. 1, p. 453.
1908, pt. 1, p. 561.

PIUTE COUNTY.

43. Kimberly (Gold Mountain). Au, Ag.
15 miles SW. Sevier, D. & R. G. R. R.
Tertiary volcanics.
Veins.
Lindgren, W., The Annie Laurie mine, Piute County, Utah: Bull. 285, 1906, pp. 87–90.
Min. Res. 1909, pt. 1, p. 473.
Top. sheet Beaver.

PIUTE COUNTY—Continued.

44. Omitted.
45. Ohio (Marysvale, Mount Baldy). Au, Ag, Cu, Pb, Hg.
  Station D. & R. G. R. R.
  Tertiary volcanics and Triassic sediments.
  Veins.
  Butler, B. S., and Gale, H. S., Alunite, a newly discovered deposit near Marysvale, Utah: Bull. 511, 1912.
  Lindgren, W., The Annie Laurie mine, Piute County, Utah: Bull. 285, 1906, pp. 87-90.
  Min. Res. 1905, p. 320.
    1906, p. 348.
    1907, pt. 1, p. 453.
    1908, pt. 1, p. 561.
    1909, pt. 1, p. 473.
  Top. sheet Beaver.

SALT LAKE COUNTY.

46. Big Cottonwood. Ag, Pb, Au, Cu, Zn.
  Sandy station, D. & R. G. R. R.
  Paleozoic sediments cut by granite.
  Replacements, veins, contact metamorphic.
  Min. Res. 1885, p. 249.
    1905, p. 321.
    1906, pp. 348-349, 444.
    1907, pt. 1, pp. 453-454.
    1908, pt. 1, pp. 561-562.
    1909, pt. 1, pp. 473-474.
  Top. sheets Salt Lake, Cottonwood special.
47. Hot Springs.
  10 miles N. Le Grande, D. & R. G. R. R.
  Top. sheet Salt Lake.
48. Little Cottonwood (Alta). Ag, Pb, Au, Cu, Mn, Fe.
  16 miles E. Sandy, D. & R. G. R. R., S. P. L. A. & S. L. R. R.
  Paleozoic sediments cut by granite.
  Replacements, veins.
  Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 121.
  Hess, F. L., Some molybdenum deposits in Maine, Utah, and California: Bull. 340, 1908, pp. 239-240.
  Min. Res. 1885, p. 249.
    1905, pp. 320-321.
    1906, pp. 348-349, 449.
    1907, pt. 1, pp. 453-454.
    1908, pt. 1, pp. 561-562.
    1909, pt. 1, pp. 473-474.
  Top. sheets Salt Lake, Cottonwood special.
49. West Mountain (Bingham). Cu, Au, Ag, Pb (Zn, Fe, Mn).
  Bingham Canyon, D. & R. G. R. R.
  Paleozoic sediments cut by monzonite.
  Replacements, disseminations, veins.
  Boutwell, J. M., Ore deposits of Bingham, Utah: Bull. 213, 1903, pp. 105-122; Bull. 260, 1905, pp. 236-241.
  Boutwell, J. M., Keith, A., and Emmons, S. F., Economic geology of the Bingham mining district, Utah: P. P. 38, 1905.

SALT LAKE COUNTY—Continued.

49. **West Mountain (Bingham)**—Continued.
  Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 121-122.
  Min. Res. 1883-84, pp. 416-418.
  1885, p. 249.
  1886, p. 143.
  1887, p. 104.
  1904, pp. 237-239.
  1905, pp. 321-325, 354-355.
  1906, pp. 350-354, 404-407, 449.
  1907, pt. 1, pp. 454-460, 615-618.
  1908, pt. 1, pp. 216-217, 562-566.
  1909, pt. 1, pp. 171, 474-479.
  Top. sheets Bingham mining map, Tooele Valley.

SAN JUAN COUNTY.

50. **Blue Mountains (Monticello).** Au, Ag, Cu.
  95 miles SSE. Thompson's, 75 miles W. Placerville, Colo., R. G. S. R. R.
  Min. Res. 1908, pt. 1, pp. 566, 741.
  Top. sheet Abajo.
51. Omitted.
52. **Bluff.** Au, Ag. (Pl.)
  On San Juan and Grand rivers, 70 miles W. Cortez, Colo., R. G. S. R. R.
  Stream gravels.
  Min. Res. 1906, p. 354.
  1908, pt. 1, p. 566.
  Top. sheets Henry Mountains, Abajo.

SEVIER COUNTY.

53. **Henry.** Ag, Au.
  5 miles SE. Sevier, D. & R. G. R. R.
  Tertiary volcanics.
  Veins.
  Min. Res. 1905, p. 325.
  1906, p. 354.
  1908, pt. 1, pp. 561, 567.
  Top. sheet Beaver.
54. **Salina Creek.** Pb, Cu (Ag).
  Salina station, D. & R. G. R. R.
  Min. Res. 1908, pt. 1, p. 567.
  Top. sheet Fish Lake.

SUMMIT COUNTY.

55. **Uinta (Park City).** Ag, Pb, Au, Cu, Zn.
  Station D. & R. G. R. R., U. P. R. R.
  Pre-Cambrian and Paleozoic sediments cut by granodiorite and andesite.
  Veins, replacements, and contact metamorphic.
  Boutwell, J. M., Progress report on the Park City mining district, Utah: Bull. 213, 1903, pp. 31-40; Bull. 225, 1904, pp. 141-150; Bull. 260, 1905, pp. 150-153.
  ——— and Woolsey, L. H., Geology and ore deposits of the Park City district, Utah: P. P. 77, 1912.
  Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 121-122.

SUMMIT COUNTY—Continued.

55. **Uinta (Park City)**—Continued.
Min. Res. 1885, p. 249.
1886, p. 143.
1887, p. 104.
1888, p. 86.
1905, pp. 325–328.
1906, pp. 354–357, 449, 476.
1907, pt. 1, pp. 460–463.
1908, pt. 1, pp. 567–570.
1909, pt. 1, pp. 479–481.
Top. sheets Salt Lake, Coalville, Park City special.

TOOELE COUNTY.

56. **Blue Bells.** Au (Ag, Pb).
Lofgreen station, S. P. L. A. & S. L. R. R.
Top. sheet Tooele Valley.

57. **Camp Floyd (Mercur).** Au, Ag, Pb (Hg).
Mercur station, S. L. & M. R. R.
Paleozoic sediments cut by porphyry.
Replacements.
Becker, G. F., Geology of the quicksilver deposits of the Pacific slope: M. XIII, 1888, p. 386.
Spurr, J. E., Economic geology of the Mercur mining district, Utah: Sixteenth Ann. Rept., pt. 2, 1896, pp. 343–455.
Min. Res. 1905, pp. 328, 329, 398.
1906, pp. 358–359, 494.
1907, pt. 1, pp. 464–465, 682.
1908, pt. 1, pp. 570–571.
1909, pt. 1, pp. 482–483.
Top. sheet Tooele Valley.

58. **Clifton (Gold Hill).** Cu, Au, Ag, Pb.
90 miles NE. Cherry Creek, Nev., N. N. R. R.
Paleozoic sediments cut by porphyry.
Contact metamorphic.
Min. Res. 1905, p. 317.
1906, p. 359.
1908, pt. 1, p. 571.
1909, pt. 1, p. 483.

59. **Columbia.** Ag, Pb.
Lofgreen station, S. P. L. A. & S. L. R. R.
Min. Res. 1908, pt. 1, p. 572.
1909, pt. 1, p. 483.
Top. sheet Sevier Desert.

60. **Desert.**
45 miles SW. Center, S. P. L. A. & S. L. R. R.
Top. sheet Tooele Valley.

61. **Dugway.** Pb, Cu, Ag.
76 miles WSW. Center, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by porphyry.
Min. Res. 1905, p. 317.
1906, p. 359.

62. **Erikson.** Cu.
25 miles SSW. Center, S. P. L. A. & S. L. R. R.
Granite.

TOOELE COUNTY—Continued.

62. **Erikson**—Continued.
Veins.
Top. sheet Sevier Desert.

63. **Granite Mountains.** Pb, Ag.
85 miles W. Center, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by porphyry (?).
Veins (?).
Min. Res. 1905, p. 317.

64. **Lakeside.** Pb, Ag.
Dell station, W. P. R. R.
Min. Res. 1905, p. 317.
Top. sheet Tooele Valley.

65. **North Tintic.** Pb, Ag, Zn (Au).
5 miles N. Eureka, D. & R. G. R. R.
Paleozoic sediments.
Replacements and veins.
Tower, G. W., and Smith, G. O., Geology and mining industry of the Tintic district, Utah: Nineteenth Ann. Rept., pt. 3, 1899, pp. 601–767.
Min. Res. 1905, p. 330.
1906, pp. 359–360, 476.
1907, pt. 1, p. 465.
1909, pt. 1, pp. 483–484.
Top. sheets Sevier Desert, Tintic special.
Folio 65, 1900.

66. **Ophir.** Ag, Au, Pb, Cu, Zn (Fe).
8 miles E. St. John, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by monzonite.
Veins and replacements.
Min. Res. 1885, p. 249.
1905, pp. 328, 330.
1906, pp. 360, 408.
1907, pt. 1, p. 465.
1908, pt. 1, p. 572.
1909, pt. 1, p. 484.
Top. sheet Tooele Valley.

67. **Rush Valley (Stockton).** Ag, Pb, Au (Cu, Zn, Fe).
Stockton station, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut by acidic and basic dikes.
Veins, replacements.
Min. Res. 1905, pp. 328, 330.
1906, p. 360.
1907, pt. 1, pp. 465–466.
1908, pt. 1, p. 572.
1909, pt. 1, p. 484.
Top. sheet Tooele Valley.

68. **Silver Islet.** Pb, Cu, Ag.
9 miles N. Wendover, W. P. R. R.
Limestone.
Replacements.
Min. Res. 1908, pt. 1, p. 572.
1909, pt. 1, p. 484.

69. **Tooele.**
Station S. P. L. A. & S. L. R. R.
Top. sheet Tooele Valley.

TOOELE COUNTY—Continued.

70. **Willow Springs.** Ag, Pb.
80 miles NE. Cherry Creek, Nev., N. N. R. R.
Top. sheet Fish Springs.

UINTA COUNTY.

71. **Carbonate.** Au, Ag, Cu.
82 miles NNW. Dragoon, U. R. R.
Top. sheets Marsh Peak, Ashley.

72. **Green River (Cub Creek).** Au. (Pl.)
70 miles SE. Carter, Wyo., U. P. R. R.
Stream gravels.
Min. Res. 1905, pp. 360-361.
1908, pt. 1, p. 572.
1909, pt. 1, p. 448.
Top. sheet Ashley.

73. **Spring Creek.** Fe.
70 miles SE. Carter, Wyo., U. P. R. R.
Jurassic and Cretaceous sediments.
Bedded.
Boutwell, J. M., Iron ores in the Uinta Mountains, Utah: Bull. 225, 1904, p. 225.
Top. sheet Ashley.

UTAH COUNTY.

74. **American Fork.** Ag, Au, Pb, Cu (Zn).
25 miles NE. American Fork, D. & R. G. R. R., S. P. L. A. & S. L. R. R.
Paleozoic sediments.
Replacements.
Min. Res. 1905, p. 330.
1906, p. 361.
1907, pt. 1, pp. 466-467.
1908, pt. 1, p. 573.
1909, pt. 1, p. 485.
Top. sheets Salt Lake, Cottonwood special.

75. **Lehi.**
15 miles S. Lehi, D. & R. G. R. R., S. P. L. A. & S. L. R. R.
Top. sheet Salt Lake.

76. **Provo.** Pb, Ag.
Provo station, D. & R. G. R. R., S. P. L. A. & S. L. R. R.
Top. sheet Salt Lake.

77. **Santaquin.** Ag, Pb.
Station S. P. L. A. & S. L. R. R
Min. Res. 1909, pt. 1, p. 485.
Top. sheet Manti.

78. **Silver Lake.** Ag, Pb.
15 miles E. American Fork, D. & R. G. R. R., S. P. L. A. & S. L. R. R.
Top. sheet Salt Lake.

79. **Tintic.** Au, Ag, Pb.
Eureka station, D. & R. G. R. R.
Paleozoic sediments cut by monzonite.
Replacements and veins.
Harder, E. C., Manganese deposits of the United States: Bull. 380, 1909, p. 279.
Tower, G. W., and Smith, G. O., Geology and mining industry of the Tintic district, Utah: Nineteenth Ann. Rept., pt. 3, 1899, pp. 601-767.

UTAH COUNTY—Continued.

79. **Tintic**—Continued.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 121.
Min. Res. 1882, pp. 228-229.
1887, p. 104.
1905, p. 330.
1907, pt. 1, p. 466.
1908, pt. 1, p. 572.
1909, pt. 1, p. 485.
Top. sheets Manti, Tintic special.
Folio 65, 1900.

80. **Utah.**
10 miles N. Elberta, D. & R. G. R. R.
Top. sheets Tooele Valley, Salt Lake.

WASATCH COUNTY.

81. **Blue Ledge.** Cu, Ag, Au.
5 miles W. Heber, D. & R. G. R. R.
Top. sheet Salt Lake.

82. **North Fork.** Au, Ag, Cu.
40 miles SE. Park City, D. & R. G. R. R.
Paleozoic sediments.
Min. Res. 1905, p. 328.
Top. sheets Uinta, Hayden Peak.

83. **Rhodes Plateau (Woodland).** Fe.
30 miles ESE. Park City, 30 miles ENE. Heber, D. & R. G. R. R.
Paleozoic sediments.
Replacements.
Boutwell, J. M., Iron ores of the Uinta Mountains, Utah: Bull. 225, 1904, pp. 221-228.
Top. sheet Coalville.

84. **Snake Creek.** Au, Ag, Pb, Zn, Cu.
10 miles SW. Heber, D. & R. G. R. R.
Top. sheets Salt Lake, Coalville.

WASHINGTON COUNTY.

85. **Bull Valley.** Fe.
28 miles S. Modena, S. P. L. A. & S. L. R. R.
Paleozoic sediments cut and capped by Tertiary lavas.
Contact metamorphic.
Leith, C. K., and Harder, E. C., The iron ores of the Iron Springs district, southern Utah: Bull. 338, 1908, p. 90.
Min. Res. 1908, pt. 1, p. 573.
Top. sheet St. George.

86. **Harrisburg (Silver Reef).** Ag.
75 miles SE. Modena, S. P. L. A. & S. L. R. R.
"Red Beds."
Impregnations.
Emmons, S. F., The copper in the red beds of the Colorado Plateau region: Bull. 260, 1905, p. 228.
Min. Res. 1905, pp. 330-331.
1907, pt. 1, p. 467.
1908, pt. 1, p. 573.
1909, pt. 1, p. 485.
Top. sheet St. George

WASHINGTON COUNTY—Continued.

87. **Tutsagubet.** Cu, Pb, Ag (Au).
60 miles SSE. Acoma, Nev., S. P. L. A. & S. L. R. R.
Paleozoic limestone.
Replacements.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 121.
Min. Res. 1906, pp. 361-362, 408.
1907, pt. 1, p. 467.
1909, pt. 1, p. 485.
Top. sheet St. George.

WEBER COUNTY.

88. **Sierra Madre.** Cu, Au, Ag, Pb, Fe.
10 miles N. Ogden, U. P. R. R., S. P. R. R., D. & R. G. R. R., O. S. L. R. R.
Pre-Cambrian granite and gneiss, Paleozoic sediments.
Veins.
Min. Res. 1905, p. 331.
1906, pp. 343-344.
1908, pt. 1, p. 556.

WASHINGTON.

In Washington 59 mining districts are scattered through 15 counties. In 31 of these districts the gold values are highest, in 11 copper is most valuable, in 6 lead, in 5 silver, and in 3 iron. There is one camp producing antimony, one tungsten, and one tin and tungsten, all classed as rare-metal districts.

Distribution of the predominant metals produced in the mining districts of Washington.

County.	Gold.	Silver.	Copper.	Lead.	Iron.	Rare metals.	Total.
Chelan	8						8
Clallam	3						3
Ferry	3	1	3				7
King	1				1		2
Kittitas	2						2
Lincoln		1					1
Okanogan	7	1	1	1			10
Pierce			1				1
Skagit		1	1		1		3
Skamania and Lewis			1			1	2
Snohomish	3		3				6
Spokane						1	1
Stevens	2	1	1	5	1	1	11
Whatcom	2						2
	31	5	11	6	3	3	59

MINING DISTRICTS IN WASHINGTON.

[See Pl. XV. Additional references will be found in Mineral Resources for 1910 and 1911.]

CHELAN COUNTY.

1. **Bridge Creek (Stehekin).** Au, Ag.
   100 miles N. Wenatchee, G. N. R. R.
   Granite, gneiss, and schist.
   Veins.
   Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 92.
   Top. sheet Stehekin.
2. **Entiat.** Au, Ag.
   20 miles N. Wenatchee, G. N. R. R.
   Schists.
   Veins.
   Russell, I. C., A preliminary paper on the geology of the Cascade Mountains in northern Washington: Twentieth Ann. Rept., pt. 2, 1900, p. 209.
   Min. Res. 1907, pt. 1, p. 473.
   Top. sheet Chelan.
3. **Horseshoe Basin (Pershall).** Au, Ag, Pb, Cu.
   140 miles N. Wenatchee, G. N. R. R.
   Min. Res. 1904, p. 340.
   Top. sheet Stehekin.

CHELAN COUNTY—Continued.

4. **Lakeside.** Au.
    40 miles N. Wenatchee, G. N. R. R.
    Min. Res. 1907, pt. 1, p. 473.
    1908, pt. 1, p. 578.
    Top. sheet Chelan.
5. **Leavenworth.** Au, Ag. (D, Pl.)
    Station G. N. R. R.
    Min. Res. 1907, pt. 1, p. 473.
    1908, pt. 1, p. 577.
    Top. sheet Chiwaukum.
6. **Peshastin (Blewett).** Au, Ag. (D, Pl.)
    12 miles S. Dryden, G. N. R. R.
    Paleozoic sediments, peridotite, granodiorite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 94–98.
    Russell, I. C., A preliminary paper on the geology of the Cascade Mountains in northern Washington: Twentieth Ann. Rept., pt. 2, 1900, pp. 208–209.
    Smith, G. O., Gold mining in central Washington: Bull. 213, 1903, p. 76.
    Weaver, C. E., Geology and ore deposits of the Blewett mining district: Bull. Washington Geol. Survey No. 6, 1911.
    Min. Res. 1905, p. 336.
    Top. sheets Chiwaukum, Mount Stuart.
    Folio 106, 1904.
7. **Railroad Creek.** Au, Ag, Cu, Mo.
    87 miles N. Wenatchee, G. N. R. R.
    Gneiss and schist cut by granite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 91–94.
    Top. sheet Stehekin.
8. **Wenatchee.** Au.
    7 miles W. Wenatchee, G. N. R. R.
    Sediments cut by rhyolite.
    Veins.
    Min. Res. 1908, pt. 1, p. 578.

CLALLAM COUNTY.

9. **Ozette River.** Au. (Pl.)
    120 miles W. Port Townsend, P. T. S. R. R.
    Beach placers.
    Arnold, R., Gold placers of the coast of Washington: Bull. 260, 1905, pp. 154–157.
    Min. Res. 1908, pt. 1, p. 578.
10. **Shishi Beach.** Au. (Pl.)
    120 miles E. Port Townsend, P. T. S. R. R.
    Beach gravels.
    Arnold, R., Gold placers of the coast of Washington: Bull. 260, 1905, pp. 154–157.
11. **Yellow Banks.** Au. (Pl.)
    130 miles W. Port Townsend, P. T. S. R. R.
    Beach gravels.
    Arnold, R., Gold placers of the coast of Washington: Bull. 260, 1905, pp. 154–157.

LIST OF MINING DISTRICTS

CHELAN COUNTY
1. Bridge Creek (Stehekin)
2. Entiat
3. Horseshoe Basin (Pershall)
4. Lakeside
5. Leavenworth
6. Peshastin (Blewett)
7. Railroad Creek
8. Wenatchee

CLALLAM COUNTY
9. Ozette River
10. Shishi Beach
11. Yellow Banks

FERRY COUNTY
12. Belcher
13. Columbia River (placers)
14. Danville
15. Lone Star
16. Meteor (Covada)
17. Republic (Eureka)
18. Sanpoil

KING COUNTY
19. Money Creek (Miller Creek)

KITTITAS COUNTY
20. Fish Lake
21. Swauk (Liberty)

LEWIS COUNTY (See Skamania)

LINCOLN COUNTY
22. Crystal

OKANOGAN COUNTY
23. Conconully (Ruby)
24. Myers Creek (Chesaw)
25. Moses (Nespelem, Park City)
25a. Nighthawk
26. Osoyoos Lake (Oroville)
27. Palmer Mountain (Loomis, Wannacut Lake)
28. Squaw Creek (Methow)
29. Twisp
30. Upper Methow
31. Wauconda

PIERCE COUNTY
32. Carbon River

SKAGIT COUNTY
33. Bald Mountain
34. Thunder Creek

SKAMANIA and LEWIS COUNTIES
35. Mineral
36. St. Helens

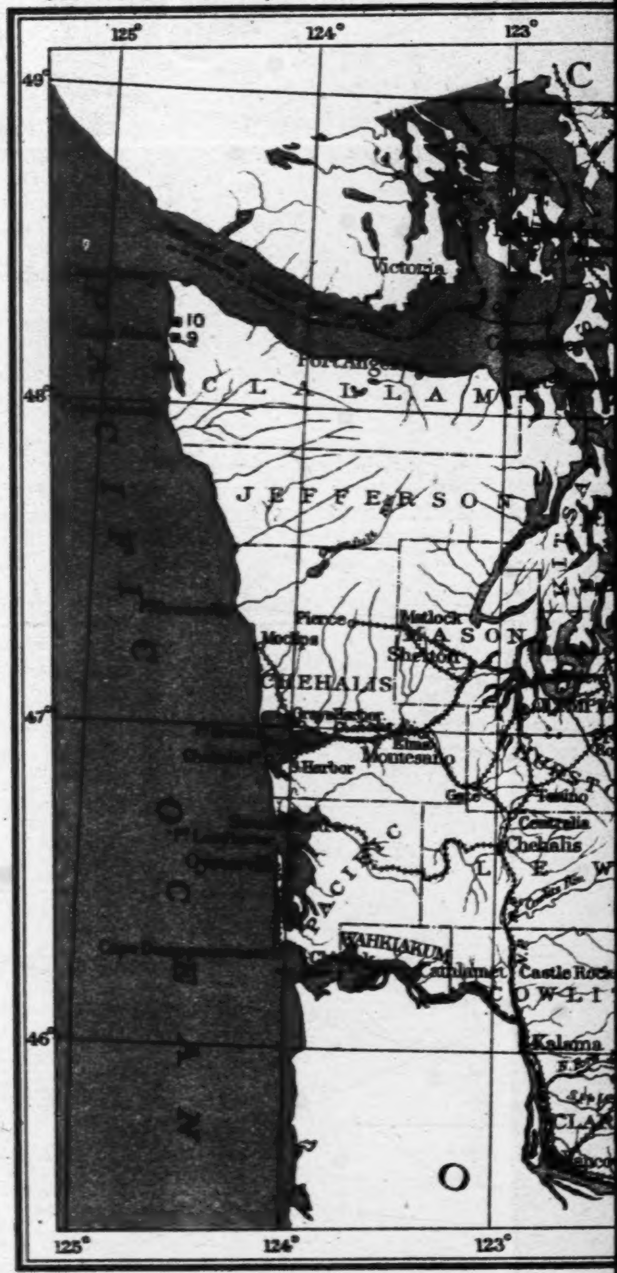
SNOHOMISH COUNTY
37. Darrington
38. Granite Falls
39. Index
40. Monte Cristo
41. Silver Creek
42. Stilaguamish (Silverton)

SPOKANE COUNTY
43. Silver Hill

STEVENS COUNTY
44. Bossburg
45. Chewelah
46. Deep Creek Lake
47. Deer Park
48. Deer Trail
49. Metaline
50. Meyers Falls
51. Northport
52. Old Dominion (Colville)
53. Orient
54. Silver Queen

WHATCOM COUNTY
55. Mount Baker
56. Slate Creek (Barron)

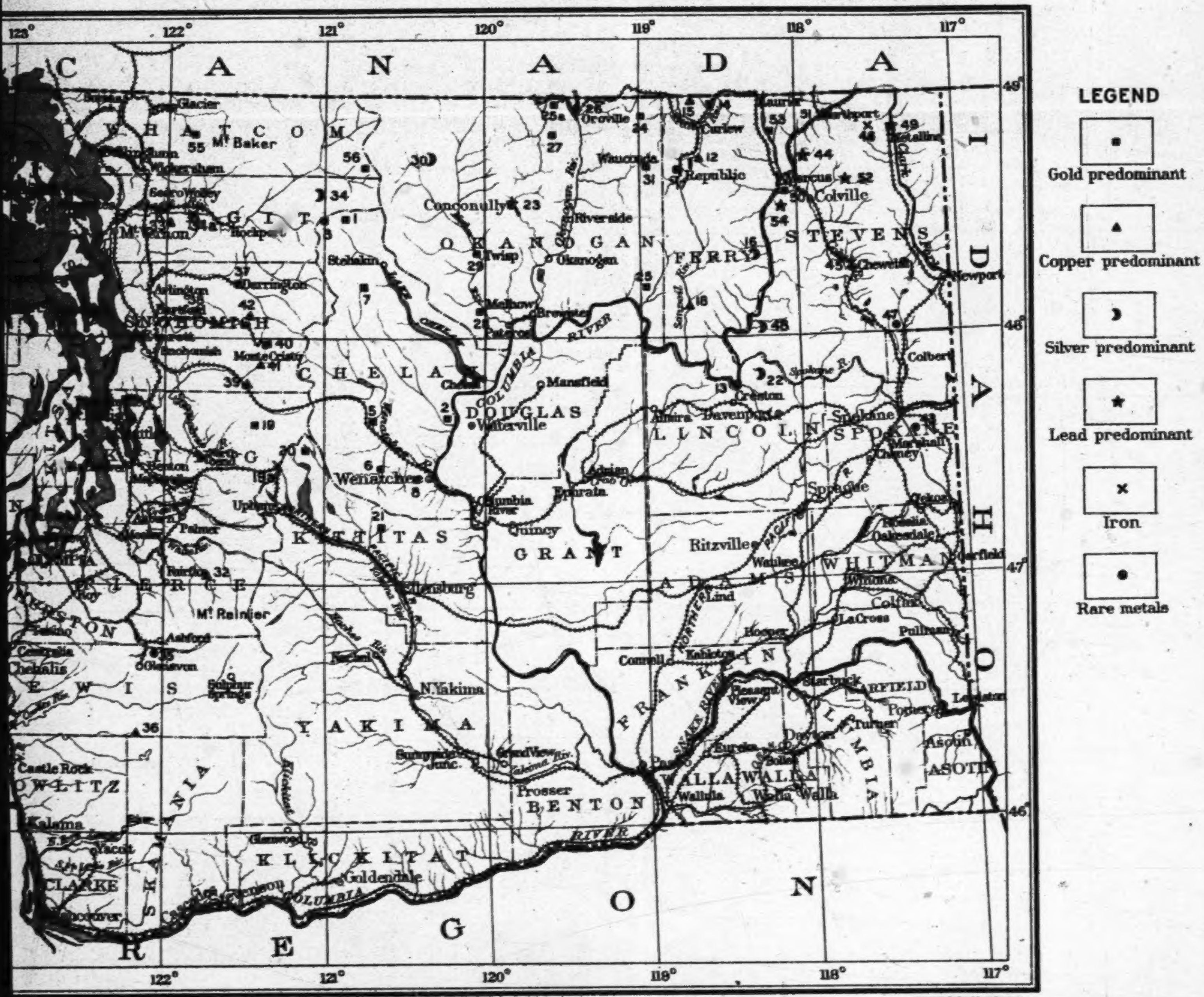
U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR


125°
124°
123°
49°
48°
47°
46°
C
Victoria
10
9
Port Angeles
CLALLAM
JEFFERSON
PACIFIC OCEAN
Pierce
Moclips
Matlock
MASON
Shelton
CHEHALIS
Grays Harbor
Elma
Montesano
Harbor
Gate
Tenino
Centralia
Chehalis
PACIFIC
LEWIS
WAHKIAKUM
Cathlamet
Castle Rock
COWLITZ
Kalama
CLA
Vanco
O
125°
124°
123°

KING COUNTY
19a. Snoqualmie Pass

SKAGIT COUNTY
34a. Hamilton

MAP OF WASH


LEGEND
■ Gold predominant
▲ Copper predominant
☽ Silver predominant
★ Lead predominant
× Iron
● Rare metals
CANADA
OREGON
IDAHO
WHATCOM
OKANOGAN
FERRY
STEVENS
SNOHOMISH
CHELAN
DOUGLAS
LINCOLN
SPOKANE
KITTITAS
GRANT
ADAMS
WHITMAN
PIERCE
LEWIS
YAKIMA
FRANKLIN
COLUMBIA
GARFIELD
ASOTIN
WALLA WALLA
BENTON
KLICKITAT
SKAMANIA
COWLITZ
CLARKE
Mt. Baker
Mt. Rainier
Conconully
Republic
Colville
Spokane
Wenatchee
Ellensburg
N. Yakima
Walla Walla
Goldendale
Vancouver
123°
122°
121°
120°
119°
118°
117°
49°
48°
47°
46°

JULIUS BIEN CO. LITH. N.Y.

WASHINGTON, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

FERRY COUNTY.

12. **Belcher.** Cu.
Belcher siding, G. N. R. R.
Paleozoic sediments cut by quartz monzonite.
Replacements, contact metamorphic.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 125.
Top. sheet Republic.

13. **Columbia River.** Au. (Pl.)
11 miles NE. Creston, N. P. R. R.
Stream gravels.
Collier, A. J., Gold-bearing river sands of northeastern Washington: Bull. 315, 1907, pp. 56–70.

14. **Danville.** Au, Cu, Ag.
Station G. N. R. R.
Paleozoic sediments and greenstones.
Replacements and veins.
Min. Res. 1907, pt. 1, p. 473.
1908, pt. 1, p. 578.
Top. sheet Republic.

15. **Lone Star.** Cu.
6 miles W. Danville, G. N. R. R.
Paleozoic sediments cut by quartz monzonites.
Veins and replacements.
Top. sheet Republic.

16. **Meteor (Covada).** Ag, Pb, Sb.
34 miles SSW. Meyers Falls, G. N. R. R.
Metamorphosed Paleozoic sediments cut by diorite.
Veins.
Min. Res. 1907, pt. 1, p. 473.
1908, pt. 1, p. 578.

17. **Republic (Eureka).** Au, Ag.
Station G. N. R. R.
Tertiary volcanics.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 52–60.
Umpleby, J. B., Geology and ore deposits of Republic mining district: Bull. Washington Geol. Survey No. 1, 1910.
Min. Res. 1905, p. 356.
1906, p. 366.
1907, pt. 1, pp. 473–474.
1908, pt. 1, p. 578.
Top. sheet Republic.

18. **Sanpoil.** Cu, Pb, Ag, Ni.
30 miles N. Wilbur, N. P. R. R.
Metamorphosed Paleozoic sediments cut by quartz monzonite.
Veins, replacements.

KING COUNTY.

19. **Money Creek (Miller Creek).** Au, Ag, Pb, Cu, Sb.
Berlin station, G. N. R. R.
Granite.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 120–124.

KING COUNTY—Continued.

19. **Money Creek (Miller Creek)**—Continued.
    Min. Res. 1905, p. 336.
    1906, p. 367.
    Top. sheet Skykomish.

19a. **Snoqualmie Pass.** Fe.
    Snoqualime Pass, C. M. & P. S. R. R.
    Marble, limestone, and granite.
    Bedded.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 241-243.

KITTITAS COUNTY.

20. **Fish Lake.** Au, Ag, Cu.
    40 miles N. Roslyn, N. P. R. R.
    Min. Res. 1905, p. 336.
    Top. sheet Skykomish.

21. **Swauk (Liberty).** Au, Ag, Fe. (D, Pl.)
    15 miles ENE. Clealum, N. P. R. R.
    Tertiary sediments cut by basalt.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 125-127, 243-252.
    Russell, I. C., A preliminary paper on the geology of the Cascade Mountains in northern Washington: Twentieth Ann. Rept., pt. 2, 1900, pp. 206-208.
    Smith, G. O., Gold mining in central Washington: Bull. 213, 1903, pp. 76-80.
    Min. Res. 1905, p. 336.
    1906, p. 367.
    1907, pt. 1, p. 474.
    1908, pt. 1, p. 579.
    Top. sheet Mount Stuart.
    Folio 106, 1904.

LEWIS COUNTY. (See Skamania.)

LINCOLN COUNTY.

22. **Crystal.** Ag, Pb.
    15 miles N. Davenport, N. P. R. R.
    Schists and slates.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 60.

OKANOGAN COUNTY.

23. **Conconully (Ruby).** Pb, Ag, Au, Cu.
    26 miles S. Nighthawk, G. N. R. R.
    Granite, schist, and gneiss cut by dikes.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 70-72.
    Smith, G. O., and Calkins, F. C., A geological reconnaissance across the Cascade Range near the forty-ninth parallel: Bull. 235, 1904, pp. 94-95.
    Min. Res. 1907, pt. 1, p. 475.
    1908, pt. 1, p. 580.
    Top. sheet Chopaka.

24. **Myers Creek (Chesaw).** Au, Ag, Cu. (D, Pl.)
    5 miles S. Myncaster, Canada, G. N. R. R.
    Paleozoic sediments and greenstones cut by granite and syenite.
    Veins, contact metamorphic.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 64-66.

OKANOGAN COUNTY—Continued.

24. **Myers Creek (Chesaw)**—Continued.
    Umpleby, J. B., Geology and ore deposits of the Myers Creek mining district: Bull. Washington Geol. Survey No. 5, 1911, pp. 11-52.
    Min. Res. 1906, p. 367.
    1907, pt. 1, p. 474.
    1908, pt. 1, p. 579.
    Top. sheet Osoyoos.

25. **Moses (Nespelem, Park City).** Au, Ag, Pb, Cu.
    37 miles N. Almira, N. P. R. R.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 72.
    Min. Res. 1908, pt. 1, p. 579.

25a. **Nighthawk.** Au, Ag.
    Station G. N. R. R.
    Paleozoic sediments and greenstones cut by granite.
    Veins.
    Umpleby, J. B., Geology and ore deposits of the Oroville-Nighthawk mining district: Bull. Washington Geol. Survey No. 5, 1911, pp. 55-107.

26. **Osoyoos Lake (Oroville).** Cu, Au.
    Oroville station, G. N. R. R.
    Paleozoic sediments and greenstones cut by andesite.
    Veins, disseminations.
    Umpleby, J. B., Geology and ore deposits of the Oroville-Nighthawk mining district: Bull. Washington Geol. Survey No. 5, 1911, pp. 55-107.
    Min. Res. 1907, pt. 1, p. 474.
    Top. sheet Osoyoos.

27. **Palmer Mountains (Wannacut Lake, Loomis).** Au, Cu, Ag.
    14 miles S. Nighthawk, G. N. R. R.
    Greenstones and Paleozoic sediments cut by granite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 66-70.
    Smith, G. O., and Calkins, F. C., A geologic reconnaissance across the Cascade Range near the forty-ninth parallel: Bull. 235, 1904, p. 95.
    Min. Res. 1906, p. 367.
    1908, pt. 1, pp. 580, 723.
    Top. sheet Chopaka.

28. **Squaw Creek (Methow).** Au, Ag, Cu, Sb.
    53 miles N. Mansfield, 73 miles NNE. Wenatchee, G. N. R. R.
    Gneiss cut by granite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 75-78.
    Min. Res. 1906, p. 512.
    1907, pt. 1, p. 475.
    1908, pt. 1, p. 579.
    Top. sheet Methow.

29. **Twisp.** Au, Ag, Cu.
    97 miles N. Wenatchee, G. N. R. R.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 74-75.
    Top. sheet Methow.

30. **Upper Methow.** Ag, Cu, Au.
    119 miles N. Wenatchee, G. N. R. R.
    Gneiss and schist cut by granite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 73-74.

OKANOGAN COUNTY—Continued.

31. **Wauconda.** Au, Ag.
    19 miles NW. Republic, G. N. R. R.
    Paleozoic sediments cut by granite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 62–64.

PIERCE COUNTY.

32. **Carbon River.** Cu, Au.
    Fairfax station, N. P. R. R.
    Syenite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 127–131.

SKAGIT COUNTY.

33. **Bald Mountains.** Cu, Au.
    10 miles S. Lymon, G. N. R. R.
    Schist and slate cut by diorite.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 89–90.
    Top. sheet Mount Vernon.
34. **Thunder Creek.** Ag, Au.
    36 miles W. Rockport, G. N. R. R.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 90.
34a. **Hamilton.** Fe.
    Hamilton station, G. N. R. R.
    Sandstones, limestones, shale, and slate.
    Beds.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 235–241.

SKAMANIA AND LEWIS COUNTIES.

35. **Mineral.** As.
    Station T. E. R. R.
    Min. Res. 1904, p. 372.
36. **St. Helens.** Cu, Ag, Pb.
    41 miles E. Castlerock, N. P. R. R.
    Syenite cut by porphyry.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 131–135.
    Min. Res. 1905, p. 337.

SNOHOMISH COUNTY.

37. **Darrington.** Au, Ag, Cu.
    Station N. P. R. R.
    Schist, slate, serpentine.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 99–101.
    Russell, I. C., A preliminary paper on the geology of the Cascade Mountains in northern Washington: Twentieth Ann. Rept., pt. 2, 1900, p. 209.
    Min. Res. 1908, pt. 1, p. 580.
38. **Granite Falls.** Au, Ag, Cu.
    Station N. P. R. R.
    Min. Res. 1906, p. 367.
    1907, pt. 1, p. 475.
39. **Index.** Cu, Ag, Au.
    Station G. N. R. R.
    Granite cut by basic dikes.

SNOHOMISH COUNTY—Continued.

39. **Index**—Continued.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 114–120.
Weaver, C. E., Geology and ore deposits of the Index mining district: Bull. Washington Geol. Survey No. 7, 1912.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 123.
Min. Res. 1907, pt. 1, p. 475.
1908, pt. 1, p. 580.
Top. sheet Skykomish.

40. **Monte Cristo.** Au, Ag, Cu, As.
Station N. P. R. R.
Mesozoic granites and Tertiary volcanics.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 108–111.
Spurr, J. E., The ore deposits of Monte Cristo, Wash.: Twenty-second Ann. Rept., pt. 2, 1901, pp. 777–866.
Min. Res. 1905, p. 337.
1907, pt. 1, p. 475.
Top. sheet Skykomish.

41. **Silver Creek.** Cu, Au, Ag, Pb.
8 miles SW. Monte Cristo, N. P. R. R.
Granite and Tertiary volcanics.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 111–114.
Spurr, J. E., The ore deposits of Monte Cristo, Wash.: Twenty-second Ann. Rept., pt. 2, 1901, pp. 777–866.
Top. sheet Skykomish.

42. **Stillaguamish (Silverton).** Cu, Au, Ag, Pb.
Station N. P. R. R.
Granite, diorite.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 101–108.
Min. Res. 1906, p. 367.
Top. sheet Glacier Peak.

SPOKANE COUNTY.

43. **Silver Hill.** Sn, W.
12 miles SSE. Spokane, N. P. R. R., G. N. R. R.
Pre-Cambrian gneiss and schist cut by acidic and basic dikes and capped by basalt.
Veins.
Collier, A. J., Tin ore at Spokane, Wash.: Bull. 340, 1908, pp. 295–305.
Min. Res. 1907, pt. 1, p. 725.
1908, pt. 1, p. 723.
Top. sheet Spokane.

STEVENS COUNTY.

44. **Bossburg.** Pb, Ag.
Station G. N. R. R.
Paleozoic sediments.
Replacement, veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 45.
Min. Res. 1907, pt. 1, p. 476.
1908, pt. 1, pp. 580–581.

STEVENS COUNTY—Continued.

45. **Chewelah.** Cu, Ag, Pb, Zn, Au, Fe.
Station G. N. R. R.
Paleozoic sediments cut by diorite and other basic intrusives.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 45.
Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, p. 123.
Min. Res. 1905, p. 337.
1907, pt. 1, p. 476.
1908, pt. 1, pp. 580-581.

46. **Deep Creek Lake.** Fe.
12 miles SE. Northport, G. N. R. R.
Granite, Paleozoic sediments.
Bedded.
Leith, C. K., Iron ores of the western United States and British Columbia: Bull. 285, 1906, p. 195.

47. **Deer Park.** W.
5 miles NE. Loon Lake, 10 miles N. Deer Park, G. N. R. R.
Granite and metamorphosed Paleozoic sediments.
Lenses and veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 46.
Bancroft, H., Notes on tungsten deposits near Deer Park, Wash.: Bull. 430, 1910, pp. 214-216.
Min. Res. 1905, pp. 411-412.
1909, pt. 1, p. 580.

48. **Deer Trail.** Ag, Pb, W, Au, Cu.
18 miles WSW. Springdale, G. N. R. R.
Paleozoic sediments cut by acidic and basic dikes.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 46-50.
Min. Res. 1904, p. 331.
1905, p. 337.
1906, p. 367.
1907, pt. 1, p. 476.
1908, pt. 1, pp. 581, 723.
1909, pt. 1, p. 580.

49. **Metaline.** Pb, Zn, Ag.
Station I. & W. N. R. R.
Paleozoic sediments.
Disseminated and replacements.
Bancroft, H., Lead and zinc deposits in the Metaline mining district, northeastern Washington: Bull. 470, 1911, pp. 188-200.
Min. Res. 1906, p. 451.
1908, pt. 1, p. 581.

50. **Meyers Falls.** Au, Ag, Cu.
Station G. N. R. R.
Paleozoic sediments cut by porphyry.
Veins.
Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 44.
Min. Res. 1905, p. 337.
1907, pt. 1, p. 476.
1908, pt. 1, pp. 580-581.

STEVENS COUNTY—Continued.

51. **Northport.** Pb, Ag, Zn.
    Station G. N. R. R.
    Paleozoic sediments cut by acidic and basic dikes.
    Veins, replacements.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 43-44.
    Min. Res. 1906, pp. 367, 451.
    1907, pt. 1, p. 476.
52. **Old Dominion (Colville).** Pb, Ag.
    7 miles E. Colville, G. N. R. R.
    Paleozoic sediments cut by granite.
    Contact metamorphic.
    Min. Res. 1908, pt. 1, pp. 580-581.
53. **Orient.** Au, Ag, Cu.
    Station G. N. R. R.
    Tertiary volcanics.
    Veins, impregnations.
    Min. Res. 1905, p. 337.
    1908, pt. 1, p. 581.
54. **Silver Queen.** Pb, Ag.
    8 miles S. Meyers Falls, G. N. R. R.
    Paleozoic sediments cut by granite.
    Replacement veins.

WHATCOM COUNTY.

55. **Mount Baker.** Au, Ag, Cu.
    12 miles ESE. Glacier, B. B. & B. C. R. R.
    Metamorphosed sediments cut by porphyry.
    Veins.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, p. 79.
    Smith, G. O., and Calkins, F. C., A geological reconnaissance across the Cascade Range near the forty-ninth parallel: Bull. 235, 1904, pp. 95-96.
    Min. Res. 1905, p. 337.
    1906, p. 368.
    1907, pt. 1, p. 477.
56. **Slate Creek (Barron).** Au, Ag. (Pl.)
    60 miles NE. Rockport, G. N. R. R.
    Stream gravels.
    Ann. Rept. Washington Geol. Survey, vol. 1, 1902, pp. 83-88.
    Russell, I. C., A preliminary paper on the geology of the Cascade Mountains in northern Washington: Twentieth Ann. Rept., pt. 2, 1900, p. 209.
    Min. Res. 1906, p. 368.
    1907, pt. 1, p. 477.
    1908, pt. 1, pp. 581-582.

WYOMING.

In the State of Wyoming 11 counties are producers of metallic minerals and 36 mining districts are recognized by the United States Geological Survey. In 19 of these districts copper is the principal metal produced and in 13 gold values predominate. Three districts are assigned to iron, but in one of these chromium is mined exclusively. One locality is in the prospect stage and its predominant metal is uncertain.

Distribution of the predominant metals produced in the mining districts of Wyoming.

County.	Gold.	Copper.	Iron.	Unknown.	Total.
Albany	1	4	1	....	6
Bighorn and Park	4	1	....	....	5
Carbon	....	4	....	....	4
Converse	....	1	1	....	2
Crook	2	....	....	....	2
Fremont	3	3	....	1	7
Johnson	1	1	....	....	2
Laramie	....	3	1	....	4
Natrona	....	1	....	....	1
Uinta	2	1	....	....	3
	13	19	3	1	36

MINING DISTRICTS IN WYOMING.

[See Pl. XVI. Additional references will be found in Mineral Resources for 1910 and 1911.]

ALBANY COUNTY.

1. **Centennial (La Plata).** Au.
   Station L. H. P. & P. R. R.
   Min. Res. 1906, p. 369.
   1907, pt. 1, p. 479.
   1908, pt. 1, p. 584.
   Top. sheet Medicine Bow.
2. **Douglas Creek (Holmes).** Cu, Au, Ag, Pt, Pd. (D, Pl.)
   10 miles WNW. Albany, L. H. P. & P. R. R.
   Gneiss and quartzite cut by basic dikes.
   Veins.
   Ann. Rept. State Geologist Wyoming, 1904, pp. 23–24.
   Ann. Rept. Territorial Geologist Wyoming, 1887, pp. 69–70.
   Beeler, H. C., Mineral and allied resources of Albany County, Wyo., Wyoming Geol. Survey, 1906, pp. 13–54.
   Emmons, S. F., Platinum in copper ores in Wyoming: Bull. 213, 1903, pp. 94–97.
   Jamison, C. E., Mineral resources of Wyoming, Wyoming Geol. Survey, 1911, pp. 28–29.
   ——— Mining in the Grand Encampment copper district, Wyoming Geol. Survey, 1905.
   ——— Wyoming mines, Wyoming Geol. Survey, 1908, pp. 28, 29.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

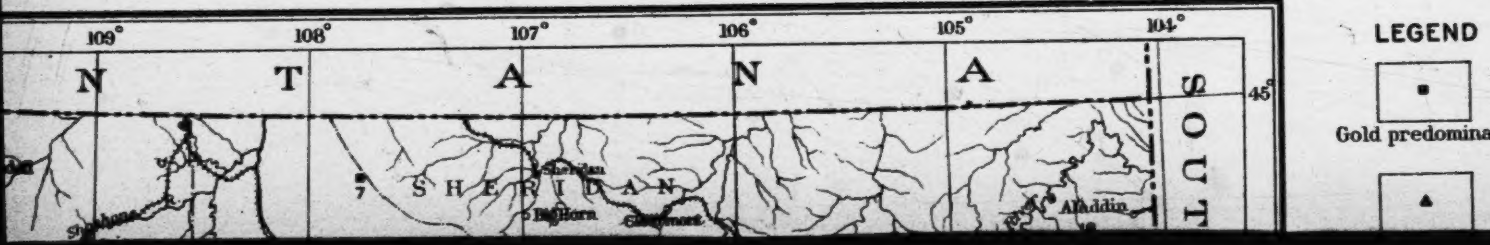
LIST OF MINING DISTRICTS

ALBANY COUNTY

1. Centennial (La Plata)
2. Douglas Creek (Holmes)
3. Horse Creek
4. Iron Mountain
5. Jelm Mountain
6. Laramie Peak (Esterbrook)

111°
110°
M
O
N
45°
YELLOWSTONE
NATIONAL
8
Crandall
10

BULLETIN 507 PLATE XVI


109°
108°
107°
106°
105°
104°
N T A N A
SOUT
45°
SHERIDAN
Sheridan
7
Big Horn
Clearmont
Aladdin
LEGEND
Gold predominant

3. Horse Creek
4. Iron Mountain
5. Jelm Mountain
6. Laramie Peak (Estabrook)

BIGHORN AND PARK COUNTIES

7. Bald Mountain
8. Clark Fork
9. South Fork
10. Sunlight
11. Wood River (Kirwin)

CARBON COUNTY

12. Encampment (Battle, Purgatory, Three Forks)
13. French Creek
14. Rankin
15. Seminole

CONVERSE COUNTY

16. Deer Creek
17. Warbonnet

CROOK COUNTY

18. Bear Lodge
19. Hurricane

FREMONT COUNTY

20. Atlantic
21. Birdseye (Copper Mountain)
22. De Pass
23. Lewiston
24. Owl Creek
25. South Pass
26. Willow Creek

JOHNSON COUNTY

27. Bull Camp
28. Kelley Creek (Buffalo)

LARAMIE COUNTY

29. Hartville (Sunrise, Platte Canyon)
30. Fish Creek
31. Rawhide Buttes
32. Silver Crown (Hecla)

NATRONA COUNTY

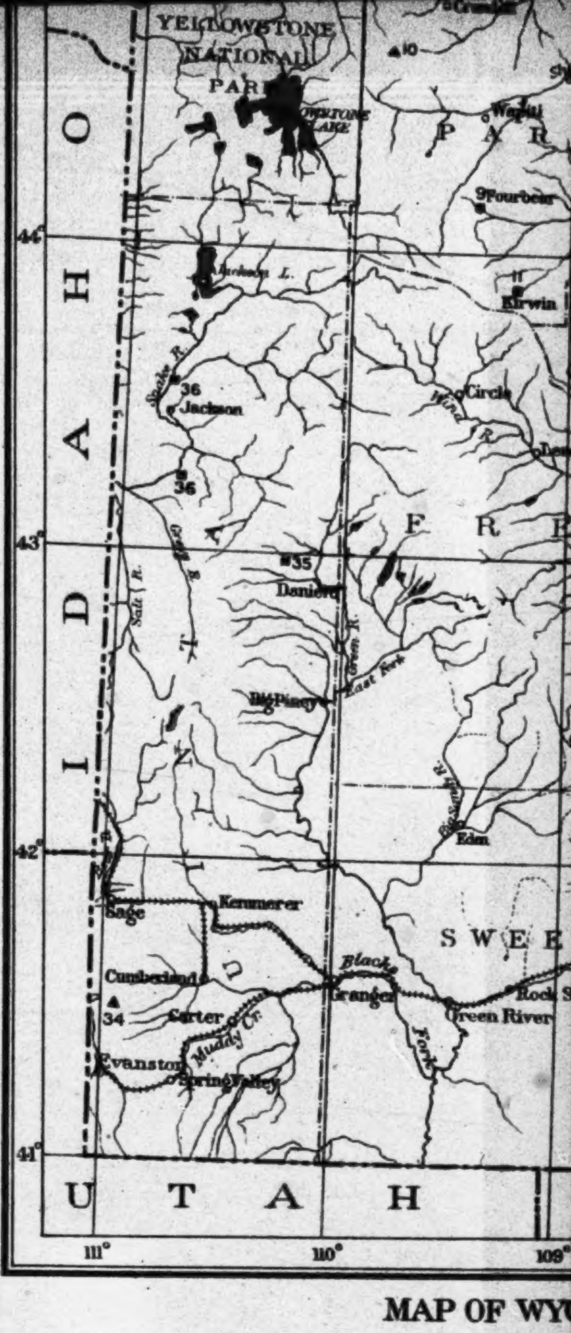
33. Casper Mountain

PARK COUNTY

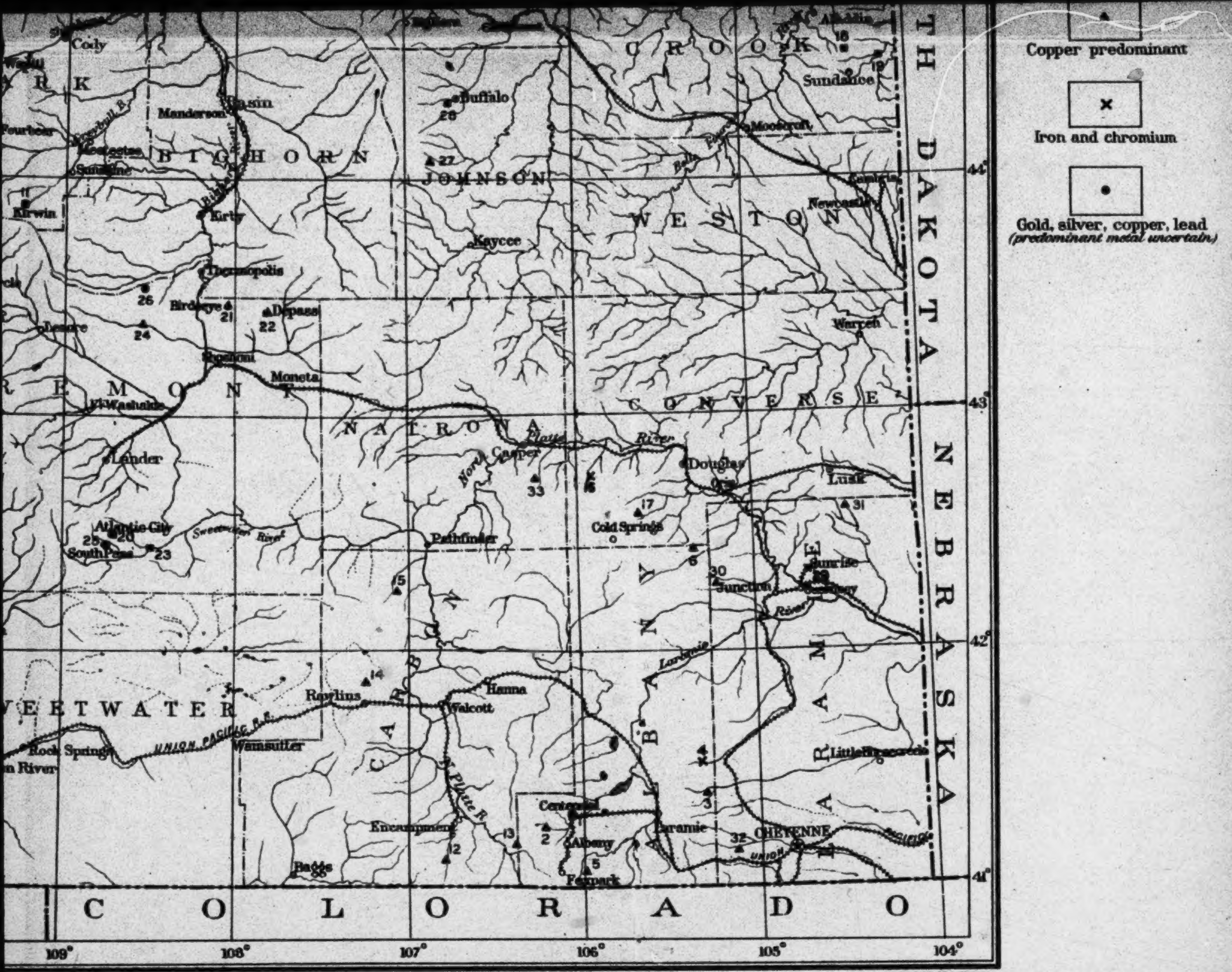
(See Bighorn)

UINTA COUNTY

34. Coxcomb
35. Horse Creek
36. Snake River placers (Hoback) (Pine Bar)


YELLOWSTONE
NATIONAL
PARK
YELLOWSTONE LAKE
10
Wapiti
P A R
9 Fourbear
44°
I D A H O
Jackson L.
11
Kirwin
Snake R.
36
Jackson
Circle
Wind R.
36
F R E
43°
35
Daniel
Salt R.
Green R.
East Fork
Big Piney
Big Sandy R.
Eden
42°
Sage
Kemmerer
U
S W E E
Black
Cumberland
Granger
Rock S
Green River
34
Carter
Muddy Cr.
Fork
Evanston
Spring Valley
41°
U T A H
111°
110°
109°

MAP OF WY


Copper predominant
Iron and chromium
Gold, silver, copper, lead
(predominant metal uncertain)
Cody
Basin
Manderson
Buffalo
BIGHORN
JOHNSON
CROOK
Sundance
Moorcroft
WESTON
Newcastle
Cambria
Kirwin
Kirby
Kaycee
Thermopolis
Birdseye
Depass
Shoshoni
Moneta
FREMONT
Ft. Washakie
Lander
NATRONA
CONVERSE
Casper
Douglas
Lusk
Warren
Atlantic City
South Pass
Sweetwater River
Pathfinder
Cold Springs
Junction
Sunrise
Hartville
NIOBRARA
CARBON
ALBANY
LARAMIE
Laramie River
North Platte River
Rawlins
Walcott
Hanna
SWEETWATER
Rock Springs
Green River
Wamsutter
UNION PACIFIC R.R.
Encampment
Baggs
Centennial
Albany
Foxpark
Laramie
CHEYENNE
Little Horse creek
SOUTH DAKOTA
NEBRASKA
COLORADO
44°
43°
42°
41°
109°
108°
107°
106°
105°
104°
JULIUS BIEN CO. LITH. N.Y.

F WYOMING, SHOWING LOCATION OF MINING DISTRICTS

Scale $\frac{1}{2,500,000}$

APPROXIMATELY 40 MILES TO 1 INCH

25 0 25 50 75 100 Miles

25 0 25 50 75 100 Kilometers

1912

ALBANY COUNTY—Continued.

2. **Douglas Creek (Holmes)**—Continued.
Min. Res. 1902, pp. 244–250.
1905, p. 339.
1906, pp. 369–370.
1907, pt. 1, p. 479.
1908, pt. 1, p. 584.
1909, pt. 1, p. 493.
Top. sheet Medicine Bow.

3. **Horse Creek.** Cu.
Station C. & S. R. R.
Pre-Cambrian schist and granite.
Veins (?).
Min. Res. 1882, pp. 229–230.
1906, p. 370.
1908, pt. 1, p. 584.
Top. sheet Sherman.
Folio 173, 1910.

4. **Iron Mountain.** Fe, Ti.
8 miles west of Iron Mountain, C. & S. R. R.
Pre-Cambrian complex.
Lenticular masses and dikes.
Kemp, J. F., The titaniferous iron ores of the Adirondacks: Nineteenth Ann. Rept., pt. 3, 1899, p. 420.
Ball, S. H., Titaniferous iron ore of Iron Mountain, Wyo.: Bull. 315, 1907, pp. 206–212.
Top. sheet Sherman.
Folio 173, 1910.

5. **Jelm Mountains.** Cu, Au, Ag.
33 miles SW. Laramie, U. P. R. R.
Pre-Cambrian complex.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 24–25.
Ann. Rept. Territorial Geologist Wyoming, 1886, pp. 17–18.
Beeler, H. C., Mineral and allied resources of Albany County, Wyo., Wyoming Geol. Survey, 1906, pp. 54–58.
Min. Res. 1907, pt. 1, p. 479.
1908, pt. 1, p. 584.
Top. sheet Laramie.
Folio 173, 1910.

6. **Laramie Peak (Esterbrook).** Cu.
22 miles S. Douglas, C. B. & Q. R. R.
Granite.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 24–25.
Beeler, H. C., Mineral and allied resources of Albany County, Wyo., Wyoming Geol. Survey, 1906, pp. 60–70.
——— The North Laramie Peak copper district, Wyoming Geol. Survey, 1904.
Min. Res. 1907, pt. 1, p. 480.
1908, pt. 1, p. 584.

BIGHORN AND PARK COUNTIES.

7. **Bald Mountain.** Au. (Pl.)
30 miles E. Kane, C. B. & Q. R. R.
Cambrian sediments.

BIGHORN AND PARK COUNTIES—Continued.

7. Bald Mountain—Continued.
Free gold in conglomerate.
Eldridge, G. H., A geological reconnaissance in northwest Wyoming: Bull. 119, 1894, p. 66.
Darton, N. H., Geology of the Bighorn Mountains: P. P. 51, 1906, pp. 112–113.
Fisher, C. A., Geology and water resources of the Bighorn Basin, Wyoming: P. P. 53, 1907, p. 60.
Top. sheet Bald Mountain.
Folio 141, 1906.

8. Clark Fork. Au. (Pl.)
23 miles SSW. Belfry, N. P. R. R.
Stream gravels.
Fisher, C. A., Geology and water resources of Bighorn Basin, Wyoming: P. P. 53, 1907, p. 60.
Top. sheet Crandall.
Folio 52, 1899.

9. South Fork. Au, Ag, Cu.
52 miles SW. Cody, C. B. & Q. R. R.
Tertiary volcanics.
Veins.
Top. sheet Ishawooa.
Folio 52, 1899.

10. Sunlight. Cu, Au, Ag.
95 miles ESE. Gardiner, N. P. R. R.
Tertiary volcanics.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 25–26.
Min. Res. 1905, p. 340.
Top. sheet Crandall.
Folio 52, 1899.

11. Wood River (Kirwin). Au, Ag, Pb, Cu.
76 miles SSW. Cody, 97 miles WSW. Basin, C. B. & Q. R. R.
Ann. Rept. State Geologist Wyoming, 1904, pp. 25–26.
Beeler, H. C., Wyoming mines, 1907, Wyoming Geol. Survey, 1908, pp. 19–21.
Min. Res. 1905, p. 340.
1906, p. 370.
1907, pt. 1, p. 481.
1908, pt. 1, p. 585.
1909, pt. 1, p. 494.
Top. sheet Kirwin.

CARBON COUNTY.

12. Encampment (Battle, Purgatory, Three Forks). Cu, Ag, Au.
Station S. & E. R. R.
Pre-Cambrian complex.
Stockworks and veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 26–31.
Beeler, H. C., Wyoming mines and minerals in brief, Wyoming Geol. Survey. 1904, pp. 9–11.
Jamieson, C. E., Mineral resources of Wyoming, Wyoming Geol. Survey, 1911, p. 28.
——— Mining in the Grand Encampment copper district, Wyoming Geol. Survey, 1905.

CARBON COUNTY—Continued.

12. **Encampment (Battle, Purgatory, Three Forks)—Continued.**
   Spencer, A. C., Mineral resources of the Encampment copper region, Wyoming: Bull. 213, 1903, pp. 158–162.
   ——— The copper deposits of the Encampment district, Wyoming: P. P. 25, 1904.
   Weed, W. H., The copper mines of the United States in 1905: Bull. 285, 1906, pp. 123–124.
   Min. Res. 1905, p. 340.
   1906, pp. 370, 410.
   1907, pt. 1, pp. 480, 621, 622.
   1908, pt. 1, pp. 219, 584–585.
   1909, pt. 1, p. 493.
   Top. sheet Encampment special.
13. **French Creek.** Cu, Au.
   30 miles E. Encampment, S. & E. R. R.
   Pre-Cambrian complex cut by basic dikes.
   Top. sheet Medicine Bow.
14. **Rankin.** Cu.
   10 miles N. Rawlins, U. P. R. R.
15. **Seminole.** Cu, Fe.
   60 miles N. Rawlins, U. P. R. R.
   Schists and quartzites.
   Lenses.
   Ann. Rept. Territorial Geologist Wyoming, 1886, p. 10.
   Ann. Rept. Territorial Geologist Wyoming, 1887, pp. 70–72.
   Ann. Rept. Territorial Geologist Wyoming, 1890, pp. 61–63.
   Min. Res. 1882, p. 147.
   1883–84, p. 285.

CONVERSE COUNTY.

16. **Deer Creek.** Cr.
   15 miles SW. Glenrock, C. & N. W. R. R.
   Serpentine.
   Lenses.
   Min. Res. 1908, pt. 1, p. 766.
17. **Warbonnet.** Cu.
   25 miles SW. Douglas, C. & N. W. R. R.
   Ann. Rept. State Geologist Wyoming, 1904, pp. 31–32.
   Beeler, H. C., The North Laramie Peak copper district, Wyoming Geol. Survey, 1904.

CROOK COUNTY.

18. **Bear Lodge.** Au, Ag. (D, Pl.)
   15 miles SW. Aladdin, W. & M. R. R. R.
   Cretaceous and Tertiary sediments cut by Tertiary volcanics.
   Min. Res. 1906, p. 370.
   Top. sheet Aladdin.
   Folio 128, 1905.
19. **Hurricane.** Au. (Pl.)
   20 miles S. Aladdin, W. & M. R. R. R.; 20 miles W. Spearfish, S. Dak., C. B. & Q. R. R.
   Wash gravels.
   Min. Res. 1906, pp. 370–371.
   1907, pt. 1, p. 481.
   1908, pt. 1, p. 585.
   1909, pt. 1, p. 494.

CROOK COUNTY—Continued.

19. **Hurricane**—Continued.
Top. sheet Sundance.
Folio 127, 1905.

FREMONT COUNTY.

20. **Atlantic.** Au. (D, Pl.)
34 miles S. Lander, W. & N. W. R. R.
Pre-Cambrian complex.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 34–36.
Ann. Rept. Territorial Geologist Wyoming, 1886, pp. 12–15.
Beeler, H. C., A brief review of the South Pass gold district, Fremont County, Wyo., Wyoming Geol. Survey, 1904.
——— Wyoming mines, 1908, Wyoming Geol. Survey, 1909, pp. 21–25.
Jamieson, C. E., Geology and mineral resources of a portion of Fremont County, Wyo., Wyoming Geol. Survey, 1911, pp. 75, 80.
——— Mineral resources of Wyoming, Wyoming Geol. Survey, 1911, pp. 24–26.
Min. Res. 1905, p. 341.
1906, p. 371.
1907, pt. 1, p. 482.
1908, pt. 1, p. 586.
1909, pt. 1, p. 449.

21. **Birdseye (Copper Mountain).** Cu, Ag.
17 miles N. Shoshone, W. & N. W. R. R.
Pre-Cambrian granite and Paleozoic sediments cut by basic dikes.
Veins.
Beeler, H. C., Wyoming mines, 1908, Wyoming Geol. Survey, 1909, pp. 17–19.
Darton, N. H., Geology of the Bighorn Mountains: P. P. 51, 1906, p. 113.
Jamieson, C. E., Mineral resources of Wyoming, Wyoming Geol. Survey, 1911, p. 29.
Min. Res. 1906, p. 371.
1907, pt. 1, p. 481.
1908, pt. 1, p. 586.

22. **De Pass.** Cu, Ag.
20 miles NNE. Shoshone, W. & N. W. R. R.
Paleozoic sediments.
Darton, N. H., Geology of the Bighorn Mountains: P. P. 51, 1906, p. 113.
Min. Res. 1907, pt. 1, p. 481.

23. **Lewiston.** Au. (Pl.)
44 miles S. Lander, W. & N. W. R. R.
Min. Res. 1905, p. 341.
1907, pt. 1, p. 482.

24. **Owl Creek.** Cu, Au, Ag.
45 miles NW. Riverton, W. & N. W. R. R.
Pre-Cambrian granite and schist.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 33–34.
Ann. Rept. Territorial Geologist Wyoming, 1886, pp. 12–15.
Beeler, H. C., Wyoming mines, 1908, Wyoming Geol. Survey, 1908, pp. 16–17.

25. **South Pass.** Au. (D, Pl.)
30 miles S. Lander, W. & N. W. R. R.
Pre-Cambrian complex.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, pp. 33–34.

FREMONT COUNTY—Continued.

25. **South Pass**—Continued.
Ann. Rept. Territorial Geologist Wyoming, 1886, pp. 12–15.
Beeler, H. C., Wyoming mines and minerals in brief, Wyoming Geol. Survey, 1904, pp. 7–8.
——— A brief review of the South Pass gold district, Fremont County, Wyo., Wyoming Geol. Survey, 1904.
——— Wyoming mines, 1908, Wyoming Geol. Survey, 1909, pp. 21–25.
Jamieson, C. E., Geology and mineral resources of a portion of Fremont County, Wyo., Wyoming Geol. Survey, 1911, pp. 75–80.
Min. Res. 1905, p. 341.
1906, p. 371.
1907, pt. 1, p. 482.
1908, pt. 1, p. 586.
1909, pt. 1, p. 449.

26. **Willow Creek.**
22 miles WSW. Kerby, C. B. & Q. R. R.
Pre-Cambrian granite and schist.
Veins.
Beeler, H. C., Wyoming mines, 1908, Wyoming Geol. Survey, 1909, p. 19.
Min. Res. 1907, pt. 1, p. 482.
1909, pt. 1, p. 494.

JOHNSON COUNTY.

27. **Bull Camp.** Cu.
69 miles SW. Clearmont, C. B. & Q. R. R.
Granite cut by diabase.
Veins.
Ann. Rept. State Geologist Wyoming, 1904, p. 37.
Darton, N. H., Geology of the Bighorn Mountains: P. P. 51, 1906, p. 114.
Min. Res. 1906, p. 371.
1907, pt. 1, p. 482.
1908, pt. 1, p. 586.
1909, pt. 1, p. 494.
Top. sheet Fort McKinney.
Folio 142, 1906.

28. **Kelley Creek (Buffalo).** Au. (Pl.)
35 miles SW. Clearmont, C. B. & Q. R. R.
Cambrian conglomerate.
Gold in conglomerate.
Min. Res. 1906, p. 371.
1907, pt. 1, p. 482.
Top. sheet Fort McKinney.
Folio 142, 1906.

LARAMIE COUNTY.

29. **Hartville (Sunrise, Platte Canyon).** Fe (Cu).
Stations C. B. & Q. R. R.
Pre-Cambrian complex and Paleozoic sediments.
Replacements.
Ann. Rept. State Geologist Wyoming, 1904, p. 37.
Ann. Rept. Territorial Geologist Wyoming, 1886, pp. 19–26.
Ann. Rept. Territorial Geologist Wyoming, 1887, pp. 66–70.
Ann. Rept. Territorial Geologist Wyoming, 1890, pp. 51–61.
Ball, S. H., Copper deposits of the Hartville uplift, Wyoming: Bull. 315, 1907, pp. 93–107.

29. Hartville (Sunrise, Platte Canyon)—Continued.
  Ball, S. H., The Hartville iron-ore range, Wyoming: Bull. 315, 1907, pp. 190–205.
  Beeler, H. C., Wyoming mines, 1908, Wyoming Geol. Survey, 1909, pp. 29–33.
  Jamieson, C. E., Mineral resources of Wyoming, Wyoming Geol. Survey, 1911, pp. 27–28.
  Leith, C. K., Iron ores of the western United States and British Columbia: Bull. 285, 1906, pp. 194–195.
  Min. Res. 1882, p. 147.
    1883–84, pp. 229, 285, 342, 758–759.
    1885, p. 342.
    1888, p. 76.
    1889, p. 59.
    1905, p. 76.
    1907, pt. 1, p. 482.
    1908, pt. 1, pp. 109–110, 585.
    1909, pt. 1, p. 493.
  Top. sheet Hartville.
  Folio 91, 1903.

30. **Fish Creek.** Cu.
  39 miles W. Junction, C. B. & Q. R. R.

31. **Rawhide Buttes.** Cu, Au, Ag.
  34 miles NNW. Torrington, C. B. & Q. R. R.
  Granite, schist.
  Veins.
  Ann. Rept. Territorial Geologist Wyoming, 1887, pp. 62–66.
  Min. Res. 1907, pt. 1, p. 482.
    1908, pt. 1, p. 585.
    1909, pt. 1, p. 498.

32. **Silver Crown (Hecla).** Cu, Au, Ag.
  5 miles N. Granite Canyon, U. P. R. R.
  Pre-Cambrian schists and granite.
  Veins, impregnations.
  Ann. Rept. State Geologist Wyoming, 1904, p. 37.
  Ann. Rept. Territorial Geologist Wyoming, 1886, pp. 7–10.
  Ann. Rept. Territorial Geologist Wyoming, 1887, p. 69.
  Min. Res. 1908, pt. 1, p. 585.
  Top. sheet Sherman.
  Folio 173, 1910.

NATRONA COUNTY.

33. **Casper Mountain.** Cu.
  25 miles S. Casper, W. & N. W. R. R.
  Min. Res. 1905, p. 341.
    1906, p. 371.

PARK COUNTY. (See Bighorn.)

UINTA COUNTY.

34. **Cockscomb.** Cu.
  25 miles N. Evanston, U. P. R. R.
  "Red Beds."
  Disseminated.
  Veatch, A. C., Geography and geology of a portion of southwestern Wyoming: P. P. 56, 1907, p. 163.

UINTA COUNTY—Continued.

5. **Horse Creek.** Au, Ag. (D, Pl.)
 114 miles N. Kemmerer, U. P. R. R.
 Jurassic slates and limestones.
 Disseminated.
 Schultz, A. R., Gold developments in central Uinta County, Wyo.: Bull. 315, 1907, pp. 74–75.

6. **Snake River placers (Hoback, Pine Bar).** Au, Ag. (Pl.)
 140 miles E. St. Anthony, Idaho, O. S. L. R. R.
 Stream and terrace gravels.
 Schultz, A. R., Gold developments in central Uinta County, Wyo.: Bull. 315, 1907, pp. 71–88.
 Min. Res. 1906, p. 371.
 1907, pt. 1, p. 482.

ALPHABETIC LIST OF MINING DISTRICTS.

In the following list all the districts shown on Plates III to XVI are named in alphabetic order. In the State column "California, N" indicates the northern counties of California (Pl. IV), and "California, S" the southern counties (Pl. V). The numbers agree with those used in the plates and in the preceding lists.

Mining districts in the western United States.

Mining district.	State.	No.
A.		
Abiquiu	New Mexico	44
Acton	California, S	77
Adelaida	do	179
Adelaide	Nevada	76
Afterthought	California, N	120
Agua Caliente	California, S	47
Agua Fria	Arizona	35
Agua Fria	do	104
Ajax	Montana	9a
Ajo	Arizona	66
Alamo	Oregon	37
Alder Creek	Idaho	44
Alder Gulch	Montana	53
Alice	Colorado	23
Allegheny	California, N	143
Allens Camp	do	185
Alma	do	1
Alpine	Colorado	8
Alpine	Nevada	1
Alpine	Texas	1
Alta	Montana	91
Alta	Utah	46
Althouse	Oregon	53
Alto	New Mexico	31
Altoona	California, N	185
Alvord	California, S	121
Amador	California, N	10
Amalie	California, S	48
Amazon	Montana	32
American Canyon	Nevada	80
American Fork	Utah	74
American Hill	California, N	138
Amole	Arizona	67
Ancho	New Mexico	80
Anderson	do	11
Angels	California, N	20
Animas	Colorado	117
Antelope	Idaho	9
Apache	New Mexico	61
Apache No. 2	do	11
Apex	Colorado	44
Applegate	Oregon	46
Applegate	do	54
Aravaipa	Arizona	27
Argenta	Montana	1
Argenta	Utah	41
Argentine	Colorado	19
Arivaca	Arizona	66
Arnett Creek	Idaho	95
Aronde	California, S	122
Arrastre Canyon	do	72
Arrowhead	do	123
Ashbrook	Utah	14
Ashcroft	Colorado	96
Ashdown	Nevada	92
Ashland	Oregon	47
Ash Peak	Arizona	28
Ashwood	Oregon	23
Aspen	Colorado	99
Atlanta	Idaho	53
Atlantic	Wyoming	20
Atolia	California, S	124
Atwood	Nevada	136
Auburn	California, N	102
Auburn	Oregon	11
Auld	California, S	113
Aura	Nevada	27
Aurora	do	45
Aurum	do	165
Austin	Montana	42
Austin	Nevada	100
Aztec	Arizona	101
Azusa	California, S	73
B.		
Baboquivari	Arizona	69
Baca Grant	Colorado	114
Backer	Montana	10
Badger Hill	California, N	87
Bagby	do	67
Baird	do	121
Baker	do	63
Bald Butte	Montana	40
Bald Mountain	California, S	157
Bald Mountain	Idaho	113
Bald Mountain	Montana	1a
Bald Mountain	Wyoming	7
Bald Mountains	Washington	33
Baldy	New Mexico	5
Baldy Mountain	California, S	74
Ballarat	do	33
Bangor	California, N	12
Bannack	Montana	2
Banner	Arizona	17
Banner	California, S	109
Banner	Idaho	24
Bannock	Nevada	96
Bare Mountain	do	123
Barker	Montana	16
Barnwell	California, S	151
Barrett Springs	Nevada	92a
Barron	Washington	56
Basin	Montana	34
Battle	Wyoming	12
Battle Mountain	Colorado	35
Battle Mountain	Nevada	93

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Bay Horse	Idaho	45
Bayles	California, N	122
Beach placers	Oregon	24
Bear Creek	Idaho	58
Bear Gulch	Montana	62
Bear Gulch	do	80
Bear Lake	Idaho	5
Bear Lodge	Wyoming	18
Bearpaw	Montana	19
Beaver	Idaho	114
Beaver Creek	California, N	183
Beaver Creek	Montana	11
Beaverhead	do	3
Beaver Lake	Utah	1
Belcher	Washington	12
Bella Union	California, N	76
Bellehelen	Nevada	124
Belmont	do	125
Ben Hur	California, N	60
Benson	Arizona	11
Bentley	do	41
Berlin	Nevada	126
Bernice	do	2
Bevan	Colorado	124
Beveridge	California, S	11
Big Bar	California, N	186
Big Bug	Arizona	105
Big Cottonwood	Utah	46
Big Creek	Idaho	61
Big Dixie	California, S	49
Big Dry Creek	do	1
Big Dune	Nevada	127
Big Elk	Montana	66
Bighorn	Arizona	122
Big Pine	California, S	12
Big Oak Flat	California, N	209
Bingham	Utah	49
Birdseye	Wyoming	21
Bisbee	Arizona	10
Bishop Creek	California, S	13
Black Bear	California, N	173
Blackbird	Idaho	82
Blackbird	do	84
Black Butte	Oregon	65
Black Canyon	Arizona	106
Black Diamond	California, N	123
Blackfoot	Montana	81
Blackhawk	California, S	125
Black Hawk	New Mexico	12
Black Hills	Arizona	107
Black Hills	South Dakota	16
Black Hornet	Idaho	1
Black Horse	Nevada	106
Black Lake	Idaho	128
Black Mountain	California, S	50
Black Mountain	New Mexico	6
Black Prince	Idaho	115
Black Prince	Montana	27
Black Range	New Mexico	64
Black Rock	Arizona	108
Blacktail	Idaho	39
Black Warrior	Arizona	18
Black Warrior	Idaho	54
Blake	Colorado	115
Blakes Camp	Nevada	128
Bland	New Mexico	48
Blewett	Washington	6
Blind Spring	California, S	87
Blocksburg	California, N	56
Blue Bells	Utah	56
Blue Canyon	California, N	92
Blue Lead	South Dakota	17
Blue Ledge	California, N	153
Blue Ledge	Oregon	48
Blue Ledge	Utah	81
Blue Mountain	Colorado	111
Blue Mountains	Utah	50
Blue Ravine	California, N	117
Blue Ridge	Colorado	45
Blue River	Oregon	66
Bluewing	Idaho	85
Bluewing	Montana	4
Bluff	Utah	52
Bodie	California, S	88
Bohemia	Oregon	29
Bohemia	do	67
Boise	Idaho	2
Bolivar	Oregon	22
Bonanza	do	1
Bonanza	Texas	8
Bonita	New Mexico	34
Bossburg	Washington	44
Boulder	Montana	33
Boundary Cone	Arizona	42
Bovard	Nevada	46
Box Canyon	Colorado	50
Boxelder	Utah	19
Boyer	Nevada	3
Bradshaw	Utah	2
Bradshaw Mountains	Arizona	119
Brandy City	California, N	139
Breckenridge	Colorado	124
Brice	New Mexico	42
Bridge Creek	Washington	1
Brightwood	California, S	126
Bristol	Nevada	104
Bromide	New Mexico	45
Bromide No. 1	do	67
Browns	Nevada	77
Browns Valley	California, N	216
Brownsville	do	45
Brownsville	do	217
Bryant	Montana	5
Buckeye	California, N	137
Buck Gulch	Oregon	3
Buckhorn	Nevada	70
Buckskin	Colorado	88
Buena Vista	Nevada	47
Buffalo	Wyoming	28
Buffalo Hump	Idaho	74
Bull Camp	Wyoming	27
Bullfrog	Nevada	129
Bullion	California, S	127
Bullion	Nevada	28
Bullion	do	94
Bullion Hill	do	71
Bull Valley	Utah	85
Bully Choop	California, N	157
Bully Hill	do	124
Bunker Hill	Arizona	29
Bunker Hill	do	83
Bunkerville	Nevada	13
Burke	Idaho	119
Burkemont	Oregon	2
Burnt Creek	Idaho	103
Burnt Ranch	California, N	199
Burro Mountains	New Mexico	13
Butte	Montana	100
Butte Valley	California, N	105
C.		
Cababi	Arizona	70
Caballos Mountains	New Mexico	60
Cabinet	Montana	40
Cabinet	do	96
Cable	do	22
Cable Cove	Oregon	4
Cactus Springs	Nevada	130
Calico	California, S	128
California	Arizona	1
California	Colorado	68
California	do	71
Callahan Creek	Montana	50
Callahans	California, N	154
Calumet	Colorado	41
Camas	Idaho	10
Camas Cove	do	78
Cambridge	Nevada	45
Campbell	do	95
Camp Bird	Colorado	84
Camp Carson	Oregon	72
Camp Floyd	Utah	57
Camp Howard	Idaho	62
Campo Seco	California, N	21
Camptonville	do	218

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Canada Hill	California, N	66
Candelaria	Nevada	46
Canon City	Colorado	96
Canyon	Oregon	38
Canyon City	California, N	156
Canyoncito	New Mexico	66
Carbonate	South Dakota	7
Carbonate	Utah	71
Carbon River	Washington	22
Cardwell	Montana	39
Cargo Muchacho	California, S	7
Caribou	Colorado	3
Carlin	Nevada	29
Carmen Creek	Idaho	66
Carpenter	New Mexico	14
Carrville	California, N	189
Carson	Idaho	107
Carson Hill	California, N	26
Carters	do	213
Casa Grande	Arizona	93
Cascade	Colorado	22
Casper Mountain	Wyoming	33
Castle Dome	Arizona	124
Castle Mountain	Montana	65
Castle Peak	California, S	89
Casto	Idaho	47
Cataract	Montana	34
Cave Canyon	California, S	129
Cave Creek	Arizona	36
Cebolla	Colorado	81
Cedarville	California, N	155
Cedar	California, S	75
Cedar	Colorado	123
Cedar	Nevada	76
Cedar Creek	Montana	67
Cedar Creek	New Mexico	81
Cedar Plain	Montana	12
Cedar Valley	Arizona	43
Centennial	Nevada	30
Centennial	Wyoming	1
Centerville	Idaho	26
Central	Colorado	1
Central	do	42
Central	Nevada	70
Central	New Mexico	15
Central Benito	California, S	118
Central City	Colorado	42
Cerbat	Arizona	44
Cerrillos	New Mexico	56
Cerro Gordo	California, S	14
Chaley	Nevada	76
Chalk Creek	Colorado	9
Champion	Oregon	67
Charlestown	Nevada	33
Chemehuevis	Arizona	45
Chena Creek	Oregon	18
Cherokee	California, N	13
Cherry Creek	Arizona	100
Cherry Creek	Nevada	106
Chesaw	Washington	24
Chetco	Oregon	26
Chewelah	Washington	45
Chico	Montana	77
Chief	Nevada	106
Chilkoot	South Dakota	1
China Flat	California, N	37
Chinese Camp	do	210
Chips Flat	do	143
Chisos	Texas	2
Chloride	Arizona	46
Chloride	New Mexico	61
Chloride Cliff	California, S	15
Chloride Flat	New Mexico	16
Christmas	Arizona	19
Chuckwalla	California, S	108
Church Meadows	California, N	140
Cienega	Arizona	125
Cima	California, S	130
Cimarroncito	New Mexico	2
Clancy	Montana	37
Clark	Arizona	39
Clark Fork	Idaho	36
Clark Fork	Wyoming	9
Clear Creek	California, N	166
Clear Lake	do	68
Cleora	Colorado	10
Clifton	Utah	66
Clinton	Montana	73
Cloverdale	California, N	178
Cloverdale	Nevada	131
Cloverpatch	California, S	90
Clyde	Idaho	14
Coal Creek	Colorado	100
Coarse Gold	California, S	79
Cochetopa	Colorado	82
Cochise	Arizona	5
Cochiti	New Mexico	45
Cockscomb	Wyoming	34
Cœur d'Alene	Idaho	114 116 117 118 119 121 125 126 127
Coffee	California, N	190
Coloma	do	38
Coloma	Montana	63
Colorado	do	35
Colridge	California, N	191
Columbia	do	211
Columbia	Colorado	96
Columbia	Nevada	37
Columbia	Utah	60
Columbia River	Washington	12
Columbine	Colorado	107
Columbus	Nevada	42
Colville	Washington	52
Combination	Montana	27
Comer	Oregon	41
Comet	Montana	34
Comet	Nevada	106
Comobabi	Arizona	70
Comstock	Nevada	155
Conconully	Washington	23
Concordia	Nevada	138
Congress	Arizona	110
Conner Creek	Idaho	42
Conner Creek	Oregon	5
Consolidated-Montgomery.	Colorado	59
Contact	Nevada	31
Cooke	Montana	79
Cooks Peak	New Mexico	38
Coolin	Idaho	41
Cooney	New Mexico	60
Cooper	do	61
Copper Basin	Arizona	111
Copper Basin	Nevada	98
Copper Creek	Arizona	29 83
Coppereid	Nevada	16
Copper Hill	New Mexico	62
Copper King	Nevada	13
Copper Mountain	Arizona	31
Copper Mountain	Wyoming	21
Copperopolis	California, N	23
Copperopolis	Montana	66
Copper Ridge	Colorado	104
Copperton	New Mexico	55
Copper World	California, S	141
Corbin	Montana	35
Cornucopia	Nevada	32
Cornucopia	Oregon	6
Cornwall Basin	Nevada	33
Corona	California, S	109
Corral	Colorado	22
Corral Creek	do	46
Cortez	Nevada	71
Cortez	do	96
Cotopaxi	Colorado	87
Cottage Grove	California, N	157

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Cottonwood	California, S	131
Cottonwood	Colorado	11
Cottonwood	Nevada	157
Cottonwood Buttes	Idaho	63
Cottonwood Canyon	Nevada	3
Cottonwood Creek	California, N	156
Coulterville	do	65
Courtland	Arizona	2
Covada	Washington	16
Cow Creek	Oregon	30
Cowles	Montana	75
Cow Springs	New Mexico	13
Coyote Creek	Utah	23
Coyote Hills	Oregon	54
Cracker Creek	do	7
Crackerjack	California, S	133
Crackerjack	Oregon	20
Crane Creek	do	39
Creed	Colorado	78
Crescent	Nevada	14
Crescent City	California, N	34
Crescent Mills	do	106
Crestone	Colorado	114
Crevasse	Montana	76
Cripple Creek	Colorado	130
Crooks Corral	Idaho	64
Crown King	Arizona	118
Crystal	Washington	22
Crystal Hill	Colorado	116
Cub Creek	Utah	72
Cuba	New Mexico	49
Cuchillo Negro	do	61
Cumora	Idaho	47
Cuprite	Nevada	49
Curlew	Montana	90
Currant Creek	Colorado	28
Custer	Idaho	52
Custer	South Dakota	2
Cuyamaca	California, S	170
D.		
Daggett	California, S	128
Dairy Farm	California, N	94
Damascus	do	95
Danville	Washington	14
Dark Horse	Montana	8
Darrington	Washington	37
Darwin	California, S	16
Daulton	do	80
Daylight	do	17
Deadwood	California, N	159
Deadwood	do	192
Deadwood	Idaho	27
Deadwood	South Dakota	8
Dean	Nevada	97
Decatur	Colorado	101
Dedrick	California, N	198
Deep Creek Lake	Washington	46
Deep Hole	Nevada	158
Deep Springs	California, S	18
Deer Creek	Montana	72
Deer Creek	Wyoming	16
Deerlodge	Montana	89
Deer Park	Washington	47
Deer Trail	do	48
De Lamar	Idaho	108
Delamar	Nevada	105
Del Rio	Arizona	112
Democrat	Colorado	23
Dannemora	Montana	68
Denio	Oregon	44
Denmark	do	24
Denny	California, N	194
De Pass	Wyoming	22
Desert	Utah	60
Detroit	do	33
Devils Gate	Nevada	120
Dewey	Idaho	65
Diamond City	Montana	10
Diamond Creek	California, N	35
Dillon	Montana	4
Disaster	Nevada	79a
Dixie	Idaho	66
Dobbins	California, N	219
Dodge	do	195
Dogtown Diggings	California, S	91
Dolly Varden	Nevada	34
Dolores	New Mexico	59
Dome	Idaho	11
Domingo	Colorado	51
Dorleska	California, N	196
Dos Cabezas	Arizona	3
Dos Palmas	California, S	110
Dothan	Oregon	31
Douglas City	California, N	197
Douglas Creek	Wyoming	3
Douglas Flat	California, N	30
Douglas Mountain	Colorado	105
Downieville	California, N	141
Dragoon	Arizona	4
Draper	Oregon	49
Drew	do	32
Dripping Spring	Arizona	20
Dry Gulch	Montana	41
Dry Lake	California, S	133
Drytown	California, N	9
Dugway	Utah	61
Dulzura	California, S	171
Dumont	Colorado	24
Dun Glen	Nevada	79
Dunton	Colorado	31
Duquesne	Arizona	102
Dutch Flat	California, N	96
Dutro	California, S	103
Dyer	Nevada	50
E.		
Eagle	Idaho	116
Eagle Mountain	California, S	114
Eagle Mountains	Texas	5
Eagle River	Colorado	25
Eagle Valley	Nevada	107
Eagleville	do	4
East Beaver	Colorado	131
East Fork	Idaho	40
Eastgate	Nevada	5
East Mancos	Colorado	79
East Shore	Idaho	26
Eastman Gulch	California, N	198
Echo Canyon	California, S	10
Eden	Nevada	132
Eden	Oregon	19
Edgemont	Nevada	30
Edmanton	California, N	108
Ehrenberg	Arizona	135
Eldorado	California	29
Eldorado	do	30
Eldorado	Idaho	87
Eldorado Canyon	Nevada	15
Eldorado Pass	Arizona	47
Elizabethtown	California, N	30
Elizabethtown	New Mexico	3
Elk	Montana	82
Elk City	Idaho	67
Elkhorn	Colorado	105
Elkhorn	Idaho	12
Elkhorn	Montana	6
Elkhorn	do	36
Elkhorn	Oregon	8
Elk Mountain	Colorado	60
Elk Mountain	Nevada	35
Elk Mountain	South Dakota	9
Ellison	Arizona	71
Elliston	Montana	84
El Paso	Texas	6
Elsworth	Nevada	126
Ely	do	167
Embargo	Colorado	102
Emery	Utah	21
Emigrant	California, S	20
Emigrant Creek	Montana	77
Empire	Arizona	71
Empire	Colorado	26
Empire	do	73
Encampment	Wyoming	12
Entiat	Washington	2

Mining districts in the western United States—Continued.

Mining district.	State.	No.	Mining district.	State.	No.
Erikson	Utah	62	Gallina	New Mexico	46
Escondido	California, S	172	Gallinas	do	22
Esmeralda	California, N	23	Galls Creek	Oregon	50
Esterbrook	Wyoming	6	Garden	South Dakota	15
Estey	New Mexico	31a	Garden Valley	California, N	42
Etna	California, N	160	Gardnerville	Nevada	24
Eureka	Arizona	113	Garlic Spring	California, S	138
Eureka	California, N	142	Garlock	do	51
Eureka	Colorado	118	Garnet	Montana	28
Eureka	Idaho	88	Garnet	do	82
Eureka	Nevada	73	Gazelle	California, N	182
Eureka	New Mexico	21	Geertson	Idaho	87
Eureka	Washington	17	Geiser	Oregon	1
Evans Creek	Oregon	52	Genesee Valley	California, N	109
Evergreen	Colorado	66	Georgetown	do	43
Evolution	Idaho	117	Georgetown	Colorado	30
			Georgetown	Montana	22
F.			Georgetown	New Mexico	18
			German Gulch	Montana	85
Fairplay	California, N	40	Geyser	Nevada	110
Fairview	Nevada	6	Geyserville	California, N	179
Fairweather	Montana	53	Gibbonsville	Idaho	91
Fall Creek	Oregon	65	Gibsonville	California, N	146
Farrell	Nevada	90	Gilman	Colorado	33
Fay	do	107	Gilmore	Idaho	101
Ferguson	do	106	Gilta	California, N	182
Fesler	do	69	Giltedge	Montana	25
Fierro	New Mexico	17	Gleason Mountain	California, S	76
Fine Gold	California, S	81	Globe	Arizona	22
Finger Rock	do	188	Globe	California, S	180
Finn	Montana	88	Glorieta	New Mexico	57
First Chance	do	28	Golconda	Nevada	81
Fish Creek	Wyoming	30	Gold Banks	do	82
Fish Lake	Washington	20	Gold Bar	do	123
Fish Springs	California, S	41	Gold Basin	Arizona	48
Fish Springs	Utah	34	Gold Basin	Nevada	36
Fitting	Nevada	80	Goldbelt	California, S	22
Flagstaff Hill	California, N	41	Gold Brick	Colorado	54
Fleecer Mountain	Montana	97a	Gold Bug	Arizona	49
Flint	Idaho	109	Gold Butte	Nevada	16
Flint Creek	Montana	39	Gold Canyon	do	106
Florence	Idaho	68	Gold Circle	do	37
Florida	Colorado	72	Gold Crater	do	134
Florida Mountain	Idaho	107	Gold Creek	Idaho	81
Florida Mountains	New Mexico	37	Gold Creek	Montana	83
Folsom	California, N	117	Gold Creek	Oregon	24
Fool Hen	Montana	46	Golden	Colorado	67
Foots Creek	Oregon	60	Golden	Nevada	135
Forbestown	California, N	14	Golden	Oregon	63
Forest	do	143	Goldfield	Nevada	81
Forest Hill	do	97	Gold Fork	Idaho	28
Forks of Salmon	do	161	Gold Hill	Colorado	2
Forney	Idaho	89	Gold Hill	New Mexico	19
Fort Hall	do	4	Gold Hill	Oregon	50
Foster	California, S	173	Gold Hill	Utah	56
Francis (?)	Arizona	14	Gold Mountain	do	43
Franklin Mountains	Texas	6	Gold Mountains	Arizona	84
Frazier Mountain	California, S	193	Gold Mountains	Nevada	82
Fremont	New Mexico	36	Gold Mountains	do	66
French Corral	California, N	80	Gold Reed	Nevada	140
French Creek	South Dakota	3	Gold Road	Arizona	80
French Creek	Wyoming	13	Gold Run	California, N	96
French Gulch	California, N	125	Gold Run	Nevada	76
Freiberg	Nevada	109	Gold Springs	Utah	29
Frisco	Colorado	125	Goldyke	Nevada	136
Frisco	Utah	11	Goler	California, S	82
Frying Pan	Colorado	97	Good Hope	Nevada	38
Fulford	do	34	Goodrich Gulch	Montana	62
Furnace Creek	California, S	21	Goodsprings	Nevada	23
Furnier	California, N	144	Goodyears Bar	California, N	141
			Gore Range	Colorado	110
G.			Gottville	California, N	164
			Grand Canyon	Arizona	15
Gage	New Mexico	40	Grand Island	Colorado	8
Galena	Colorado	61	Grand Lake	do	47
Galena	Idaho	13	Granite	do	12
Galena	Nevada	98	Granite	Nevada	53
Galena	do	162	Granite	do	174
Galena	Oregon	42	Granite	Oregon	40
Galena	South Dakota	10	Granite	Utah	3
Galice	Oregon	55	Granite Basin	California, N	110
Galiuro	Arizona	84	Granite Falls	Washington	38

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Granite Gap	New Mexico	20
Granite Hill	Oregon	59
Granite Mountains	Utah	63
Graniteville	California, N	81
Grape Creek	Colorado	30
Grapevine	California, S	125
Grapevine Canyon	do	23
Grass Valley	California, N	84
Gravel Range	Idaho	80
Grayback	Colorado	28
Gray Rock	do	76
Great Eastern	California, N	180
Great Eastern	Nevada	17
Greaterville	Arizona	72
Great Western	California, N	64
Greenback	Oregon	56
Greenhorn	Colorado	39
Greenhorn	Montana	42
Greenhorn	Oregon	9
Greenhorn Mountains	California, S	52
Green Isle	Nevada	138
Greenlee	Arizona	22
Green Mountain	California, N	69
Green Mountain	California, S	54
Green Mountain	Oregon	36
Green River	Utah	73
Green Valley	Arizona	23
Greenville	California, N	106
Greenwater	California, S	21
Greenwood	Arizona	60
Greenwood	California, N	42
Gregory	Colorado	42
Griffith	do	20
Grizzly Flat	California, N	44
Grizzly Hill	do	86
Grouse Mountain	Montana	50
Grub Gulch	California, S	82
Guadalupe Mountains	Texas	7
Guerneville	California, N	180
Gunsight	Arizona	73
Gwin	California, N	24
H.		
Hachita	New Mexico	21
Hackberry	Arizona	51
Hahns Peak	Colorado	107
Hailey	Idaho	18
Halls Gulch	Colorado	90
Hamburg	California, N	165
Hamilton	Idaho	14
Hamilton	Nevada	176
Hannapah	do	137
Hanover	New Mexico	27
Hansonburg	do	72
Happy Camp	California, N	166
Happy Hooligan	Nevada	133
Harbor	Oregon	24
Harcuvar	Arizona	128
Hardscrabble	Colorado	29
Harmon	Colorado	48
Harney	Oregon	43
Harney Peak	South Dakota	18
Harpster	Idaho	65
Harquahala	Arizona	127
Harrington	do	118
Harrington	Colorado	60
Harrisburg	California, S	24
Harrisburg	Utah	86
Harrison Gulch	California, N	128
Harshaw	Arizona	93
Hart	California, S	136
Hartford	Arizona	5
Hartsel	Colorado	91
Hartville	Wyoming	29
Hassayampa	Arizona	114
Hat Mound	South Dakota	19
Havilah	California, S	55
Hawkins Creek	California, N	190
Hawkinsville	do	167
Hawthorne	Nevada	57
Hayden Hill	California, N	66
Hay Fork	do	200
Hazel	Texas	10
Headstone	New Mexico	47
Heath	Idaho	129
Heber	Montana	23
Hecla	do	5
Hecla	Wyoming	32
Hedges	California, S	7
Helen	do	137
Helena	California, N	201
Helena	Montana	43
Hellgate	do	13
Helmville	do	81
Helvetia	Arizona	74
Hembrillo	New Mexico	7
Henley	California, N	158
Henry	Utah	53
Herault	California, N	121
Hercules	Nevada	12
Hermosa	New Mexico	62
Highland	Montana	90
Highland Valley	Idaho	1
Highland Valley	do	29
Highland Valley	do	55
Highland Valley	Nevada	111
Highrolls	New Mexico	41
Hiko	Nevada	112
Hildreth	California, S	83
Hill City	South Dakota	20
Hillsboro	New Mexico	63
Hill Top	Nevada	99
Hite	Utah	24
Hite Cove	California, N	70
Hoag	do	75
Hoback	Wyoming	36
Holcomb	California, S	138
Holmes	Wyoming	2
Holy Cross	Colorado	35
Homer	California, S	92
Homestake	South Dakota	15
Homestead	Oregon	10
Hoodoo	Idaho	82
Hoopa	California, N	58
Hop Canyon	New Mexico	74
Hopewell	do	47
Hornblende	South Dakota	21
Hornbrook	California, N	158
Hornitos	do	71
Hornsilver	Nevada	84
Horse Creek	Wyoming	3
Horse Creek	do	35
Horseshoe	Colorado	92
Horseshoe	Montana	78
Horseshoe Basin	Washington	3
Hotaling	California, N	98
Hot Creek	Nevada	153
Hot Springs	do	4
Hot Springs	Utah	47
Howard	Oregon	22
Howe	Idaho	80
Howes Gulch	Colorado	73
Huachuca	Arizona	5
Hualpai	do	44 46 52 56 61
Huerfano	Colorado	64
Hughes Creek	Montana	91
Humboldt	Nevada	83
Humboldt	Oregon	70
Humbug	Arizona	129
Hunter	Idaho	118
Hunter	Nevada	160
Hurricane	Wyoming	10
Hydraulic	Colorado	80
I.		
Ibex	California, S	139
Idaho Basin	Idaho	28 30 32

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Idaho City	Idaho	30
Idaho Springs	Colorado	21
Igo	California, N	137
Imlay	Nevada	83
Imogen Basin	Colorado	84
Independence	California, S	35
Independence	Colorado	43
Index	Washington	39
Indian	California, S	93
Indian Creek	California, N	203
Indian Creek	Idaho	82
Indian Creek	Montana	15
Indian Diggings	California, N	45
Indian Gulch	do	71
Indian Hill	do	145
Indian Peak	Utah	4
Indian Secret	Arizona	65
Ingot	California, N	120
Inskip	do	15
Ione	Nevada	154
Iowa Hill	California, N	99
Iron Dyke	Oregon	10
Iron Mountain	California, N	130
Iron Mountain	California, S	140
Iron Mountain	Montana	69
Iron Mountain	South Dakota	4
Iron Mountain	Wyoming	4
Iron Spring	Colorado	119
Iron Spring	Utah	30
Ironwood	California, S	111
Isabella	do	56
Ivanpah	do	141
I. X. L.	Nevada	7
J.		
Jackrabbit	Colorado	106
Jackrabbit	Nevada	113
Jackson	California, N	4
Jackson	Colorado	37
Jackson Creek	Nevada	84a
Jacksonville	California, N	210
Jacksonville	Oregon	51
Jacobs Gulch	Idaho	31
Jacobs Lake	Arizona	16
Jamestown	California	212
Jamison	California, N	113
Jarbidge	Nevada	36
Jardine	Montana	60
Jarilla	New Mexico	42
Jericho	Utah	5
Jefferson Canyon	Nevada	135
John Mountains	Wyoming	5
Jenny Lind	California, N	35
Jerusalem Creek	do	128
Jessup	Nevada	8
Jicarilla	New Mexico	23
Johnnie	Nevada	130
Johnson	Arizona	6
Johnson	Oregon	20
Johnsville	California, N	111
Jolon	California, S	104
Jones Camp	New Mexico	71
Jordan	California, S	94
Joy	Utah	23
Julian	California, S	174
Jumbo	Nevada	163
Jumpoff Joe	Oregon	57
Junction	Idaho	98
Junction	South Dakota	5
Junction City	California, N	208
K.		
Kaibab Plateau	Arizona	10
Kane Springs	California, S	142
Kaufman	Idaho	60
Kawich	Nevada	140
Kearsarge	California, S	35
Keeler	do	39
Keith	do	96
Kelley	do	27
Kelley Creek	Wyoming	28
Kelly	New Mexico	73
Kelsey	California, N	46
Kelso	California, S	163
Kelvin	Arizona	85
Kendall	Montana	74
Kennedy	Nevada	84
Kennedy Creek	Montana	69a
Kennett	California, N	129
Kent	New Mexico	6
Kentucky Flat	California, N	47
Kerber Creek	Colorado	115
Kerby	Oregon	56
Kern	California, S	73
Kernville	do	87
Keswick	California, N	130
Ketchum	Idaho	19
Kewanee	California, S	164
Keystone	South Dakota	33
Keysville	California, S	58
Kimball	New Mexico	29
Kimberly	Nevada	99
Kimberly	Utah	43
Kingston	Colorado	44
Kingston	Nevada	103
Kingston	New Mexico	84
Kingston Range	California, S	146
Kinsley	California, N	72
Kirtley Creek	Idaho	94
Kirwin	Wyoming	11
Klamath	California, N	59
Klau	California, S	179
Knights Ferry	California, N	182
Knob	do	128
Knob Peak	California, S	146
Knownothing	California, N	108
Knoxville	do	77
Knoxville	do	215
Kofa	Arizona	128
Kokomo	Colorado	129
Kootenai	Idaho	37
Kruger	California, S	39
L.		
La Belle	New Mexico	80
La Fortuna	Arizona	129
Laguna	do	129a
La Joya	California, N	75
Lake	Colorado	63
Lakes	California, S	97
Lakeside	Utah	64
Lakeside	Washington	4
Lake Valley	New Mexico	65
Lakeview	Idaho	70
Lamoine	California, N	132
Lancha Plana	do	5
Lander	Nevada	94
Lander	do	95
Landusky	Montana	20
La Panza	California, S	150
La Plata	Colorado	13
La Plata	do	49
La Plata	Utah	20
La Plata	Wyoming	1
La Port	California, N	112
Laramie Peak	Wyoming	6
Larkin	California, N	131
La Sal	Colorado	51
Las Animas	New Mexico	63
Lascar	Texas	9
Last Chance	California, N	100
Latrobe	do	65
Lava Beds	California, S	147
Lava Creek	Idaho	15
La Veta	Colorado	65
Lawson	do	34
Lay	do	108
Lead	South Dakota	15
Lead City	do	15
Leadville	Colorado	65
Leadville	Nevada	108a
Leamington	Utah	60
Leavenworth	Washington	5
Lee	California, S	33
Leesburg	Idaho	96
Lees Camp	California, S	29
Lehi	Utah	75

Mining districts in the western United States—Continued.

Mining district.	State.	No.	Mining district.	State.	No.
Leland	Idaho	119	Manvel	California, S	151
Leviathan	California, N	3	Manzano	New Mexico	66
Lewis	Nevada	97	Marble	Nevada	141
Lewiston	California, N	196	Marietta	do	65
Lewiston	Wyoming	23	Mariposa	California, N	73
Libby	Montana	51	Mariscal	Texas	3
Liberty	Washington	21	Marshall	Idaho	70
Lida	Nevada	85	Martin	do	15
Lights Canyon	California, N	113	Marysvale	Utah	46
Lime Point	Nevada	54	Marysville	California, N	220
Lincoln	Colorado	23	Marysville	Montana	40
Lincoln	do	98	Marysville	do	44
Lincoln	Utah	6	Mason	Nevada	122
Little Backbone	California, N	129	Masonic	California, S	98
Little Cottonwood	Utah	42	Mayacmas	California, N	64
Little Cow Creek	California, N	130	Mayacmas	do	79
Little Grande	Utah	25	Mayacmas	do	181
Little Lost River	Idaho	55	Maynard	Arizona	54
Little Rockies	Montana	29	Mazuma	Nevada	90
Little Smoky	Idaho	16	McCartney Mountains	Montana	54a
Little Wood River	do	17	McClellan Creek	do	35
Little York	California, N	91	McConnico	Arizona	55
Livermore	do	2	McCracken	do	65
Lodi Valley	Nevada	141	McDevitt	Idaho	90
Logan	do	19	McIntyre	do	2
Logtown	California, N	49	McLeod	California, S	120
Lone Cone	Colorado	31	Meadow Creek	Montana	64
Lone Mountain	Montana	14	Meadow Lake	California, N	88
Lone Mountain	New Mexico	23	Meadows	Idaho	120
Lone Mountain	Nevada	114	Meadow Valley	California, N	108
Lone Mountains	do	56	Medical Springs	Oregon	73
Lone Pine	California, S	30	Medimont	Idaho	80
Lone Star	Arizona	33	Menifee	California, S	113
Lone Star	Washington	15	Melones	California, N	26
Lone Valley	California, S	149	Mercur	Utah	57
Long Tom	do	59	Mesa Grande	California, S	175
Lookout	do	31	Metaline	Washington	49
Loomis	Washington	27	Metcalf	Arizona	32
Loon Creek	Idaho	47	Meteor	Washington	16
Lordsburg	New Mexico	25	Methow	do	28
Lordsburg	do	30	Mexican	California, S	2
Los Burros	California, S	106	Meyers Falls	Washington	50
Los Gatos	California, N	118	Miami	Arizona	25
Los Prietos	California, S	156	Micanite	Colorado	38
Lost Basin	Arizona	53	Michigan Bar	California, N	117
Lost Gulch	do	24	Michigan Bluff	do	101
Lost Horse	California, S	112	Midas	Nevada	37
Lost River	Idaho	44	Middle Bar	California, N	6
Lost Springs	Utah	21	Mile Creek	Oregon	36
Louse Creek	Oregon	58	Mill Canyon	Nevada	70
Lovelocks	Nevada	85	Mill Canyon	do	96
Low Divide	California, N	36	Mill Canyon	New Mexico	74
Lowell Hill	do	82	Mill Creek	California, S	3
Lower Graves Creek	Oregon	60	Mill Creek	Montana	80
Lower Hot Springs	Montana	54	Mill Creek	Utah	41
Lower Rogue	Oregon	26	Miller Creek	Washington	19
Lower San Miguel	Colorado	130	Milletts	Nevada	143
Lucin	Utah	15	Mimbres	New Mexico	15
Lucky Boy	Nevada	87	Mina	Nevada	65
Lump Gulch	Montana	37	Minarets	California, S	84
Lundy	California, S	92	Mineral	Idaho	121
Luning	Nevada	62	Mineral	Washington	38
Lynn	do	72a	Mineral Creek	Arizona	86
Lyons	do	20	Mineral Hill	do	87
			Mineral Hill	Idaho	18
M.			Mineral Hill	do	97
			Mineral Hill	Montana	85
Mackinaw	Idaho	96	Mineral Hill	Nevada	73
Magalia	California, N	18	Mineral Hill	New Mexico	83
Magdalena	New Mexico	73	Mineral King	California, S	190
Maggie	Idaho	69	Mineral Park	Arizona	56
Maggie Creek	Nevada	75	Mineral Point	Montana	92
Magnolia	Colorado	4	Mineral Ridge	Nevada	64
Malachite	do	64	Miners Basin	Utah	26
Malachite	do	66	Minersville	California, N	204
Malheur	Oregon	71	Minersville	Oregon	11
Mammoth	Arizona	86	Minnesota	California, N	142
Mammoth	California, S	97	Minnesota	Colorado	124
Mammoth	Idaho	110	Mocking Bird	Arizona	57
Mammoth	Montana	56a	Modoc	California, S	31
Manhattan	Colorado	74	Modoc	New Mexico	8
Manhattan	Nevada	142	Mogollon	do	89
Mancos	Colorado	41	Mohave	California, S	60

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Mokelumne Hill	California, N	27
Mona	Utah	35
Monarch-Garfield	Colorado	14
Money Creek	Washington	19
Monitor	Idaho	112
Monroe Creek	do	122
Montana	Colorado	24
Montana	Montana	17
Monte Cristo	Nevada	144
Monte Cristo	Washington	40
Monte Negro	California, S	114
Monte Negro	do	167
Montezuma	Arizona	75
Montezuma	Colorado	128
Montezuma	Nevada	68
Monticello	Utah	80
Monument Peak	California, S	146
Moore Creek	Idaho	26
Moose City	do	104
Moyie Yaak	do	38
Morenci	Arizona	31
Moreno	New Mexico	3
Morgan	Utah	42
Mormon Basin	Oregon	12
Mormon Basin	do	71
Mormon Creek	Montana	74
Morongo	California, S	140
Moscow	Idaho	83
Moses	Washington	35
Mosquito	Colorado	98
Mountain City	Nevada	44
Mount Baker	Washington	55
Mount Baldy	Utah	45
Mount Bullion	California, N	73
Mount Diablo	do	82
Mount Nebo	Utah	36
Mount Pisgah	Idaho	7
Mount Pleasant	California, N	150
Mount Raymond	California, S	84
Mount Reuben	Oregon	61
Mount Tenabo	Nevada	71
Mount Torrey	Montana	6a
Mount Wilson	Colorado	121
Mowry	Arizona	94
Mud Springs	Nevada	97
Muldoon	Idaho	17
Mullan	do	118
Murphy	California, N	23
Murray	Idaho	116
Music Mountains	Arizona	58
Musselshell	Montana	66
Musselshell Creek	Idaho	105
Myers Creek	Washington	24
Myrtle Creek	Oregon	33
Myrtle Point	do	20
Mystic	South Dakota	23
N.		
Nacimiento Mountains	New Mexico	40
Napa Consolidated	California, N	79
Nashville	do	80
National	Nevada	86
Naturita	Colorado	83
Neal	Idaho	56
Nederland	Colorado	5
Needle Mountains	do	72
Needles	California, S	150
Neeley	Idaho	21
Neihart	Montana	17
Nelson	Nevada	15
Nespelem	Washington	25
Nevada City	California, N	84
Nevada	Colorado	42
New Almaden	California, N	119
Newark	Nevada	170
Newberry	California, S	147
New Coso	do	32
Newfoundland	Utah	16
Newhall	California, S	72
Newhouse	Utah	9
New Idria	California, S	119
Newmire	Colorado	120
New Placers	New Mexico	58
Newsome	Idaho	71
Newton	Utah	6
Newtown	California, N	51
Newville	do	183
New World	Montana	79
New York	California, S	151
Nigger Hill	South Dakota	11
Nighthawk	Washington	25a
Nimshew	California, N	17
N'nemile Creek	Montana	69a
Nogal	New Mexico	34
Nogales	Arizona	95
Nolton	California, N	106
Norris	Montana	54
North Bloomfield	California, N	85
North Columbia	do	86
North Fork	California, S	88
North Fork	Utah	82
North Moccasin	Montana	24
Northport	Washington	51
North San Juan	California, N	87
North Star	Utah	7
North Tintic	do	65
Norwegian	Montana	56
Nugget	Oregon	33
O.		
Oak Bar	California, N	169
Oak City	Utah	40
Oak Creek	Colorado	109
Oak Springs	Nevada	148
Oat Hill	California, N	78
O'Briens	Nevada	155
Oceanic	California, S	161
Ocean View	do	182
Ochoco	Oregon	22
Ogilby	California, S	1
Ohio	Utah	4
Olalla	Oregon	34
Old Baldy	Arizona	76
Old Dominion	Washington	52
Old Hat	Arizona	85
Old Placers	New Mexico	59
Oleta	California, N	7
Olinghouse	Nevada	164
Olive	Arizona	77
O'Mears	California, N	170
Omega	do	90
Oneota	Nevada	47
Ono	California, N	125
Ontario	Montana	84
Onward	California, S	115
Ophir	California, N	102
Ophir	Colorado	119
Ophir	Montana	85
Ophir	Utah	66
Oracle	Arizona	88
Ord	California, S	152
Organ	New Mexico	9
Orick	California, N	60
Orient	Washington	53
Oriental Wash	Nevada	59
Orleans	California, N	61
Oro Blanco	Arizona	96
Oro Fino	California, N	171
Oro Fino	Colorado	71
Oro Grande	California, S	153
Orogrande	Idaho	72
Orogrande	New Mexico	42
Oroville	California, N	18
Oroville	Washington	26
Ortiz	New Mexico	59
Osceola	Nevada	171
Oscuro	New Mexico	31a
Osoyoos Lake	Washington	26
Ottawa	Montana	44
Owl Creek	Wyoming	24
Owl Holes	California, S	154
Osette River	Washington	9

Mining districts in the western United States—Continued.

Mining district.	State.	No.
P.		
Pacific	California, N	52
Packer Creek	Montana	70
Paiute	California, S	25
Palmer Mountains	Washington	27
Palmetto	Arizona	97
Palmetto	Nevada	60
Palmyra	do	120
Palomas	New Mexico	62
Panamint	California, S	33
Panoche	do	120
Paradise	Arizona	1
Paradise	Utah	20
Paradise Valley	Nevada	87
Paris	California, S	48
Park	Colorado	63
Park	Montana	15
Park City	Utah	55
Park City	Washington	25
Parker Mountain	Idaho	98
Park Valley	Utah	17
Parsons	New Mexico	34
Patagonia	Arizona	98
Patterson	California, S	99
Patterson	Nevada	115
Patterson Creek	Idaho	95
Payette River placers	do	31
Payson	Arizona	23
Pearce	do	7
Pearl	Colorado	75
Pearl	Idaho	35
Peavine	Nevada	150
Peck	Arizona	118
Pecos	New Mexico	51
Pend Oreille	Idaho	39
Perfumo Canyon	California, S	183
Perigo	Colorado	43
Perris	California, S	116
Pershall	Washington	3
Peru	Colorado	127
Peshastin	Washington	6
Philadelphia	Nevada	125
Philipsburg	Montana	29
Picacho	California, S	8
Picuris	New Mexico	52
Pieplant	Colorado	58
Pierce	Idaho	105
Pike	California, N	147
Pilgrim	Arizona	80
Pilot Hill	California, N	53
Pilot Mountain	Nevada	66
Pima	Arizona	77
Pinacate	California, S	178
Pine	Colorado	44
Pine Bar	Wyoming	36
Pine Creek	Idaho	40
Pine Creek	do	120
Pine Flat	California, N	181
Pine Grove	do	8
Pine Grove	Idaho	57
Pine Grove	Nevada	61
Pine Grove	Utah	8
Pine Mountain	California, S	18
Pine Nut	Nevada	117
Pine Peak	California, S	182
Pine Valley	do	176
Pinos Altos	New Mexico	24
Pinto	Nevada	72
Pinto Creek	Arizona	26
Pinto Iron	Utah	31
Pinyon Mountain	California, S	117
Pioche	Nevada	116
Pioneer	Arizona	89
Pioneer	Colorado	32
Pioneer	Montana	86
Pioneerville	Idaho	83
Piru Creek	California, S	194
Pittsburg	New Mexico	66
Piute Mountain	California, S	61
Placer Basin	Idaho	133
Placer Center	do	121
Placerville	California, N	54
Placerville	Colorado	120
Placitas	New Mexico	50
Planet	Arizona	130
Platoro	Colorado	37
Platte Canyon	Wyoming	39
Pleasant Valley	Oregon	83
Pleasant View	Montana	93
Plomo	Colorado	29a
Plomosa	Arizona	131
Plymouth	California, N	9
Pocahontas	Oregon	11
Point of Rocks	Montana	59a
Poison Spring	California, S	34
Poker Flat	California, N	168
Polaris	Arizona	123
Polaris	Montana	7
Pollasky	California, S	4
Ponil	New Mexico	4
Pony	Montana	55
Poorman	do	45
Portersville	California, S	191
Portland	South Dakota	13
Port Wine	California, N	140
Potholes	California, S	10
Potlatch	Idaho	81
Potter Ridge	California, S	95
Poverty Hill	California, N	150
Pratt Creek	Idaho	99
Preston Peak	California, N	172
Preuss	Utah	9
Prickly Pear Creek	Montana	85
Priest Lake	Idaho	41
Princeton	Montana	31
Profile	Idaho	73
Promontory	Utah	15
Prospect	Nevada	73
Prospect Creek	Montana	95
Providence	California, S	163
Providence Mountains	do	135
Provo	Utah	76
Pueblo	Oregon	44
Purgatory	Wyoming	12
Pyramid	New Mexico	25
Q.		
Quartzburg	Idaho	32
Quartzburg	Oregon	41
Quartz Creek	Colorado	55
Quartz Mountain	California, N	74
Quartz Mountain	Colorado	62
Quartzsite	Arizona	131
Queen City	California, N	149
Queens	Colorado	30
Quijotoa	Arizona	78
Quitman Mountains	Texas	8
R.		
Rabbit	Montana	57
Racetrack Creek	do	87
Rademacher	California, S	63
Radersburg	Montana	13
Ragged Top	South Dakota	9
Railroad	Nevada	28
Railroad Creek	Washington	7
Railroad Flat	California, N	28
Railroad Pass	Nevada	22
Ralston Divide	California, N	103
Ramsey	Nevada	118
Ramshorn	Montana	58
Randolph	Oregon	31
Randsburg	California, S	63
Rankin	Wyoming	14
Rattlesnake Divide	California, N	37
Rawhide	do	212
Rawhide	Nevada	62
Rawhide Buttes	Wyoming	31
Ray	Arizona	85
Rebel Creek	Nevada	88
Red Butte	do	89a
Red Canyon	do	35

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Red Cliff	Colorado	38
Redding	California, N	132
Red Gorge	Colorado	109
Red Gulch	do	40
Red Hill	New Mexico	28
Red Lion	Montana	30
Red Mountain	Colorado	86
Red Mountain	Nevada	119
Red River	New Mexico	38
Red Rock	Arizona	99
Red Rock	California, S	64
Reese River	Nevada	100
Regan	do	172
Regent	do	62
Relief	California, N	85
Republic	Washington	17
Resort	Idaho	70
Reveille	Nevada	146
Rhodes Plateau	Utah	88
Rhyolite	Nevada	139
Rice	California, S	177
Richardson	Utah	37
Rich Hill	Arizona	123
Rico	Colorado	33
Riddles	Oregon	35
Rimini	Montana	46
Rincon	Arizona	79
Rinconada	California, S	184
Rio Hondo	New Mexico	54
Riverside	Arizona	90
Riverside	Colorado	15
Roaring Fork	do	99
Robbins	Idaho	74
Robinson	Nevada	167
Roe Creek	Colorado	63
Rochford	South Dakota	24
Rociada	New Mexico	54
Rock Creek	Colorado	56
Rock Creek	do	110
Rock Creek	Idaho	35
Rockerville	South Dakota	25
Rock Island	Montana	71
Rocky	Utah	10
Rocky Bar	Idaho	86
Rollins	California, N	173
Rosamond	California, S	65
Roseberry	Idaho	28
Rosebud	Nevada	89
Rosedale	New Mexico	76
Rosetta	Idaho	19
Rosita	Colorado	39
Rough and Ready	California, N	86
Round Hole	Nevada	157
Round Mountain	do	147
Rowland	do	36
Ruby	Colorado	83
Ruby	do	47
Ruby	South Dakota	12
Ruby	Washington	23
Ruby Hill	Nevada	73
Ruby Valley	do	60
Rush Valley	Utah	67
Russ	California, S	35
Russell	Colorado	28
Russell	do	43
Rusty Butte	Oregon	37
Rye Patch	Nevada	91
Rye Valley	Oregon	12
Ryne	California, N	33
S.		
Sacramento	Colorado	94
Saddle Mountain	Arizona	19
Safford	Nevada	74
St. Charles	Idaho	6
St. Helens	Washington	36
St. Joe	Idaho	134
St. Johns	California, N	177
St. Louis	do	149
St. Regis	Idaho	135
St. Regis	Montana	73
St. Thomas	Nevada	19
Salina Creek	Utah	54
Salitre	New Mexico	55
Salmon River placers	Idaho	75
San Andreas	New Mexico	76
San Antonio	California, S	186
San Carlos	Arizona	19
San Cayetano	Arizona	160
San Cristobal	Colorado	62
Sand Coulee	Montana	18
San Domingo	Arizona	87
San Emigdio	California, S	66
San Francisco	Arizona	80 83 84
Sanger	Oregon	15
San Jacinto	California, S	117b
San Lorenzo	New Mexico	77
San Luis Obispo	California, S	185
San Mateo	do	178
San Pablo	New Mexico	85
San Pedro	do	89a
Sanpoil	Washington	18
San Rafael	Utah	22
San Simon	New Mexico	20
Santa Fe	Nevada	63
Santa Lucia	California, S	185
Santa Margarita	do	184
Santa Maria	Arizona	182
Santaquin	Utah	77
Santa Rita	New Mexico	37
Santa Rosa	Arizona	80
Santa Rosa	California, S	161
Santiam	Oregon	69
San Vicente	California, S	173
San Xavier	Arizona	77
Saratoga	California, S	96
Sardine Creek	Oregon	50
Sawpit	Colorado	120
Sawpit Flat	California, N	114
Sawtooth	Idaho	20
Sawyers Bar	California, N	173
Scales	do	150
Schellbourne	Nevada	173
Schroeder	do	75
Schwaub	California, S	19
Scott Bar	California, N	174
Seafoam	Idaho	43
Searchlight	Nevada	21
Searles	California, S	97
Sedalia	Colorado	16
Seminole	Wyoming	15
Seven Devils	Idaho	134
Seven Troughs	Nevada	90
Shadow Mountains	California, S	156
Shafter	Texas	11
Shandon	New Mexico	66
Shasta	California, N	134
Shaw Mountain	Idaho	1
Sheepeater	Montana	80
Sheephead	Nevada	160
Sheep Mountain	Idaho	40
Sheep Ranch	California, N	29
Sheridan	Montana	80
Sherman	Colorado	65
Sherwin	California, S	87
Shingle Springs	California, N	39
Shishi Beach	Washington	10
Shotgun Creek	California, N	135
Shoup	Idaho	97
Siberia	Montana	86
Siegel	Nevada	165
Sierra Blanca	Texas	9
Sierra Butte	California, N	151
Sierra City	do	151
Sierra Diablo	Texas	10
Sierra Madre	Utah	88
Signal	Arizona	90
Signal	California, S	167
Silver	Arizona	126a
Silver	South Dakota	30
Silver Bell	Arizona	81
Silverbow	Nevada	148
Silver Butte	Montana	86

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Silver Canyon	Nevada	165
Silver City	Idaho	107
Silver City	Nevada	130
Silver City	New Mexico	16
Silver Cliff	Colorado	39
Silver Creek	Washington	41
Silver Crown	Wyoming	32
Silver Hill	Arizona	82
Silver Hill	New Mexico	43
Silver Hill	Washington	43
Silver Islet	Utah	66
Silver King	Arizona	91
Silver Lake	Utah	78
Silver Mountain	California, N	3
Silver Mountain	California, S	156
Silver Mountain	New Mexico	78
Silver Peak	Nevada	64
Silver Plume	Colorado	20
Silver Queen	Washington	54
Silver Reef	California, S	125
Silver Reef	Utah	85
Silver Star	Montana	60
Silver Star	Nevada	65
Silverton	Washington	42
Simpson	Idaho	75
Sixes River	Oregon	28
Skidoo	California, S	38
Skookum	Nevada	101
Skull Creek	Colorado	111
Skull Canyon	Idaho	60
Slate Creek	California, N	205
Slate Creek	Idaho	122
Slate Creek	Montana	94
Slate Creek	Washington	56
Slate Range	California, S	68
Slate Range	do	122
Slater	Colorado	106
Slavonia	do	112
Smartsville	California, N	221
Snake Creek	Utah	84
Snake River	Colorado	126
Snake River placers	Idaho	3 8 21 43 111
Snake River placers	Wyoming	26
Sneffels	Colorado	86
Snowshoe	Montana	51
Snowy Creek	California, S	194
Snyderville	Colorado	122
Socorro	New Mexico	79
Sodaville	Nevada	66
Soldier	Idaho	22
Soledad	California, S	77
Somes Bar	California, N	175
Sonoita Mountains	Arizona	75
Soulsbyville	California, N	213
South Arkansas	Colorado	17
South Boulder	Montana	31
Southern Klondike	Nevada	67
South Clear Creek	California, N	127
South Fork	Wyoming	9
South Fork Weaver Creek	California, N	81
South Mountain	Idaho	112
South Pass	Wyoming	25
Spanish Diggings	California, N	85
Spanish Gulch	Oregon	74
Spanish Ranch	California, N	115
Spangler	California, S	159
Sparta	Oregon	14
Spaulding	Colorado	30
Spearfish	South Dakota	13
Spencer	Nevada	102
Spenceville	California, N	89
Sperry	do	23
Spokane	South Dakota	6
Spring City	Nevada	87
Spring Creek	Colorado	113
Spring Creek	Utah	27
Spring Creek	do	73
Spring Gulch	Montana	97

Mining district.	State.	No.
Spring Hill	Montana	43
Spring Mountain	Idaho	100
Spruce Gulch	South Dakota	14
Spruce Mountains	Nevada	41
Squaw Creek	Arizona	116
Squaw Creek	California, N	129
Squaw Creek	Washington	28
Standard	California, S	177
Stanley	Arizona	34
Stanley Basin	Idaho	30
Star	Nevada	91
Star	Utah	12
Starvout	Oregon	36
State Line	Nevada	107
Stateline	Utah	32
Stayton	California, S	120
Steamboat Springs	Colorado	113
Steamboat Springs	Nevada	161
Steamboat Rock	Colorado	75
Stedman	California, S	169
Steeplerock	New Mexico	28
Steins Pass	do	22
Stehekin	Washington	1
Stella	California, N	136
Stemple	Montana	46
Stent	California, N	212
Steptoe	Nevada	174
Stice	Oregon	15
Stillaguamish	Washington	42
Stockton	Utah	67
Stockton Hill	Arizona	61
Stokes	Idaho	42
Stonewall Mountain	Nevada	140
Strawberry	do	170
Strawberry Gulch	South Dakota	10
Stringer	California, S	161
Sugarloaf	Colorado	6
Sulphur Bank	California, N	65
Sulphur Creek	do	32
Summerville	do	176
Summit	California, S	89
Summit	Idaho	126
Summit	Montana	61
Summit	Nevada	37
Summit Flat	Idaho	33
Summit Valley	Montana	100
Summitville	Colorado	103
Sumpter	Oregon	7
Sunlight	Wyoming	10
Sunnyside	California, N	195
Sunnyside	Colorado	78
Sunrise	Wyoming	20
Superior	Montana	67
Superior	Nevada	150
Susanville	Oregon	42
Sutter Creek	California, N	10
Swan River	Colorado	128
Swansea	Arizona	133
Swansea	California, S	39
Swauk	Washington	21
Swedes Point	California, N	206
Sycamore	California, S	5
Sylvanite	Montana	53
Sylvanite	New Mexico	21
T.		
Table Mountain	California, S	106
Table Rock	California, N	145
Talapoosa	Nevada	131
Tarryall	Colorado	96
Taylor	Nevada	175
Taylorsville	California, N	116
Tecolot	New Mexico	85
Tecoma	Nevada	43
Tecopa Mountain	California, S	36
Telegraph	New Mexico	20
Telluride	Colorado	123
Temescal Mountains	California, S	117a
Temperance Flat	do	8
Tenabo	Nevada	64
Tenmile	Colorado	129
Tennessee Pass	do	69
Terlingua	Texas	4

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Tesla	California, N	2
Teviston (?)	Arizona	8
Texas Creek	Idaho	101
Texas Creek	New Mexico	10
Three Forks	Colorado	108
Three Forks	Wyoming	12
Thumb Butte	Arizona	117
Thunder Creek	Washington	34
Thunder Mountain	Idaho	76
Tibbets	California, S	40
Tidal Wave	Montana	62
Tierra Blanca	New Mexico	67
Tiger	Arizona	118
Tijeras Canyon	New Mexico	1
Tincup	Colorado	56
Tinemaha	California, S	41
Tintic	Utah	28
Tintic	do	79
Tinton	South Dakota	11
Tioga	California, S	160
Tiptop	Arizona	119
Tokop	Nevada	68
Tombstone	Arizona	9
Tom Head	California, N	184
Tomichi	Colorado	30
Tonopah	Nevada	151
Tooele	Utah	60
Towle	California, N	96
Trabuco Canyon	California, S	107
Trail	Colorado	25
Trappmans	Nevada	158
Trent	California, N	94
Tres Hermanas	New Mexico	39
Trinity Center	California, N	207
Trojan	California, S	108
Trout Creek	Montana	67
Trout Creek	Oregon	28
Troy	Arizona	17
Tucki Mountain	California, S	43
Tujunga	do	78
Tularosa	New Mexico	43
Tule Canyon	Nevada	55
Tungsten	do	171
Turquois	Arizona	3
Turret	Colorado	18
Tuscarora	Nevada	42
Tutsagubet	Utah	87
Tuttletown	California, N	214
Twentynine Palms	California, S	164
Twin Buttes	Arizona	77
Twining	New Mexico	84
Twin Lakes	Colorado	70
Twin Springs	Idaho	34
Twisp	Washington	20
Two Bit Creek	South Dakota	14
Tybo	Nevada	153
Tyndall	Arizona	101
Tyson	Idaho	78
U.		
Ubehebe	California, S	43
Uinta	Utah	55
Unaweep	Colorado	77
Uncompahgre	do	87
Union	California, S	44
Union	Colorado	124
Union	Montana	38
Union	Nevada	154
Union Pass	Arizona	62
Unionville	Montana	47
Unionville	Nevada	91
Upper Grave Creek	Oregon	35
Upper Hot Springs	Montana	63
Upper Methow	Washington	30
Upper San Miguel	Colorado	128
Upper Union	do	38
Ulysses	Idaho	92
Utah	Utah	80
Ute	Colorado	27
Ute Creek	New Mexico	5
Utopia	Montana	8
V.		
Vallecito	California, N	30
Valley Springs	do	21
Vanderbilt	California, S	165
Van Dusen	Nevada	44
Veryville	do	216
Vaughn	California, S	70
Vaughn	Montana	48
Vekol	Arizona	92
Verde	do	120
Vermillion	Montana	96
Vernon	Nevada	90
Vicksburg	Arizona	134
Vicksburg	Nevada	92
Victorio	New Mexico	40
Victorville	California, S	166
Vincent	Nevada	22
Vipond	Montana	9
Virginia	Arizona	63
Virginia	Colorado	21
Virginia	New Mexico	30
Virginia City	Montana	53
Virginia Dale	California, S	167
Virtue	Oregon	10
Vivian	Arizona	64
Vixen	Colorado	82
Volcano	California, N	11
Volcanoville	do	47
Vontrigger	California, S	157
Vulcan	Colorado	51
Vulture	Arizona	36
W.		
Waldo	Oregon	62
Walker	Arizona	121
Walker	California, N	171
Wallace	Idaho	121
Wallace	Montana	73
Wannacut Lake	Washington	27
Warbonnet	Wyoming	17
Ward	Colorado	7
Ward	Montana	72
Ward	Nevada	175
Wardner	Idaho	127
War Eagle	do	107
Warm Springs	do	23
Warm Springs	Montana	25
Warm Springs	do	37
Warren	Arizona	10
Warren	Idaho	77
Washington	Arizona	102
Washington	California, N	90
Washington	Montana	64
Washington	Nevada	103
Washington	Utah	13
Washington Basin	Idaho	51
Washington Gulch	Montana	88
Washoe	do	82
Washoe	Nevada	162
Water Canyon	New Mexico	78
Waucoba	California, S	25
Wauconda	Washington	31
Weatherby	Oregon	17
Weaver	Arizona	57 68
Weaver	do	123
Weaver	do	135
Weaverville	California, N	207
Wedekind	Nevada	103
Weippe	Idaho	106
Weiser	do	132
Weitchpec	California, N	62
Wellington	Nevada	26
Wellington	do	155
Wenatchee	Washington	8
West Butte	Montana	21
West Gate	Nevada	9
West Mountain	Utah	40
West Point	California, N	31
West Tintic	Utah	30

Mining districts in the western United States—Continued.

Mining district.	State.	No.
Westview	Idaho	35
Westville	California, N	104
West Walker	California, S	101
Wheatland	California, N	222
Whetstone	Arizona	11
Whipple Mountain	California, S	148
Whisky Diggings	California, N	145
Whitcomb	Montana	20
White Bird	Idaho	62
White Canyon	Utah	24
White Cloud	Nevada	10
White Earth	Colorado	60
White Gold Basin	California, S	9
Whitehall	Montana	30
Whitehall	do	56
White Hills	Arizona	65
Whitehorn	Colorado	41
White Horse	Nevada	164
Whitehouse	California, N	137
Whiteoaks	New Mexico	35
White Peak	California, S	102
White Picacho	Arizona	123
Whitepine	Colorado	59
White Pine	Nevada	176
White Plains	do	11
White River	California, S	193
Whitewood	South Dakota	15
Whitlock	California, N	73
Wickenburg	Arizona	35
Wildrose	California, S	49
Willow	do	46
Willow Creek	Idaho	35
Willow Creek	Nevada	88
Willow Creek	Wyoming	26
Willow Springs	Utah	70
Wilson Mesa	do	28
Wilsons	Nevada	152
Winchester (?)	Arizona	12
Windypah	Nevada	60
Winfield	Colorado	1a
Winnemucca	Nevada	223
Winston	Montana	11
Winthrop	California, N	134
Wisconsin	Montana	59
Wolf Creek	Oregon	63
Wolverine	Colorado	47
Wonder	Nevada	12
Woodland	Utah	83
Woodman	Montana	74
Wood River	Wyoming	11
Woody	California, S	71
Wrightson	Arizona	103
Y.		
Yankee	Colorado	23
Yankee Fork	Idaho	52
Yankee Hill	California, N	10
Yellow Banks	Washington	11
Yellowjacket	Idaho	102
Yellow Pine	Nevada	23
Yellowstone	Arizona	13
Yerington	Nevada	122
Yogo	Montana	36
York	do	41
You Bet	California, N	91
Yreka	do	167
Yreka	Idaho	127
Yuba Basin	California, N	220
Z.		
Zortman	Montana	20
Zoseli	do	80
Zuni Mountains	New Mexico	86

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